



COAL AGE



Vol. 9

NEW YORK, JANUARY 8, 1916

No. 2

Results of the Year 1915 in the Coal and Coke Industries

THE best feature of the year 1915 was the grand outlook for 1916. Prospects at the commencement of this year were as unusually bright as they were gloomy this time in 1915. Any mine that is not showing a profit now must have a serious deficiency somewhere that needs heroic remedial treatment.

THE first half of the year was dull; the second six months showed improvement, which was most pronounced at the year end. Closing prices on bituminous were the best in a decade and in some fields higher than ever before. In December some operators who could not get open cars loaded coal into box-cars and even then made a good profit.

ANTHRACITE trade was not so satisfactory. Production did not fall off greatly, but coal actually marketed was 6 or 7 million tons less than in 1914. This undelivered tonnage has been stored, so that present supplies on hand are very large. This coal, even though above ground, may not relieve any acute situation unless more cars are available to carry it.

THE past year in practically all coal states was one of radical changes. Most of these were brought about by new legislation or by rulings of various commissions on coal freight rates. Freight rates on anthracite to Philadelphia were reduced 40c. a ton. The act of the Pennsylvania Legislature imposing a tax of 2½ per cent. on hard coal was declared unconstitutional by the Pennsylvania Su-

THE INCREASE in coal production in 1915 was approximately 3,846,444 short tons, or less than 1 per cent.; bituminous increased but slightly, while anthracite decreased. Coke increased about 16 per cent.

preme Court. The state has appealed the case.

WORKMEN'S compensation is receiving new attention because for the first time in Pennsylvania the insurance rates are being based on the risks of each individual mine instead of being made equal throughout the length and breadth of the state in an entirely arbitrary manner. This change will make the installation of expensive safety devices and campaigns not only the duty of the operator but one of his surest methods of saving money.

THE past year in practically all states made the most creditable showing in the matter of fatal accidents of any 12 months in recent history. It is a remarkably old-fashioned and unprogressive coal company today that has not its trained rescue corps, safety signs and precautionary rules. One district in Wyoming produced nearly 2,000,000 tons with only three fatalities. Alabama made the best record in the history of

mining in that state in the matter of lives lost per tons produced. The increased safety shown in mining is largely due to the educational work of the United States Bureau of Mines.

THE year was practically free of labor disturbances, as all important wage scales in both anthracite and bituminous fields expire April 1. The outlook in the hard-coal districts is portentous, although a settlement is not at all out of the question. In the bituminous fields the miners as a body do not desire a strike. This is the best period of prosperity they have experienced in years, and they want it to continue.

PERHAPS the most important physical or mechanical development of the year is the advance in strip-pit mining. Steam shovels have been introduced in Indiana where 25 ft. of cover is being removed. Alabama is now mining coal by stripping, while in Oklahoma very large operations on this plan have been started. In Kansas 22 shovels were employed, each shovel averaging 28,030 tons during the year.

EXPORTS of American coal though talked of loudly, far and near, were disappointing. They were not as large as last year. The falling off was due to the depressed conditions in Canada. The year, however, was the most important in the history of the export trade, for our coals secured a footing in the strictly competitive markets of the world.

Reviews of Coal Mining in 1915

Reports follow from state mine inspectors and special correspondents, giving estimates of the year's production of coal and coke, with comments on the outlook for 1916.

Alabama

By H. S. GEISMER*

SYNOPSIS—The output of coal in Alabama for 1915 exceeded that for the previous year by about 500,000 tons. There was no car shortage nor labor troubles. Convicts have not yet been removed from the mines.

Up to Oct. 1, 1915, it looked as if the coal and coke tonnage of Alabama for the year 1915 would fall below the figures for all the years subsequent to 1909, but the sudden revival of the furnace demand during the last three months of the year brought the total coal production for the whole year above the 16,000,000 mark, which is 500,000 tons above the output for 1914. The coke output will be approximately 3,110,000 tons, as compared with 3,092,771 tons in 1914.

The number of lives lost on account of accidents was only 63, which is the lowest number since 1902, and on the basis of tons mined per life lost is the best record made in the state as far back as figures are available. There have been no labor disturbances of any kind during the year nor shortage of railroad cars. During the last two weeks of the year, however, while the railroads were stocking coal to carry them through the holidays, some mines were not able to get all the cars that they could have loaded.

Few of the mines of the state averaged better than half-time from January till October, but during the last three months of the year the mines operated by the companies owning blast furnaces ran full time and the balance of the mines about five days per week. The domestic coal operators and the mines dependent on railroad business felt the depression of the year most, unseasonable weather held down the price of domestic coal, and the railroads did not take over 50 per cent. of the minimum tonnage called for by their contracts until late in November. Railroads whose contracts expired July 1 renewed them at a lower price per ton than has been accepted for years.

COKE RECEIVED EARLY IMPETUS

The coke industry was the first to feel the revival of business due to the war. Because of the high prices offered for byproducts, the coke itself became almost the byproduct, and the byproduct-plant owners ran their ovens to capacity and stocked all of the coke that they could not dispose of. Two companies—the Woodward Iron Co. and the Tennessee Coal, Iron and Railroad Co.—built benzol plants at their byproduct ovens. The Tennessee plant is one of the largest in the world and is of the still type. The demand for foundry coke was at low ebb all through the year.

Two projects were carried to completion during the year which will have a vital effect on the coal and coke industry of the state in the future—the completion of

the power lines into the industrial centers from the hydro-electric plant on the Coosa River, belonging to the Alabama Power Co., and the opening of the Warrior River for navigation above lock 17. The first puts a strong competitor of coal in the field, and the second makes water transportation available to a large coal acreage in the state. Already three companies—namely, the Tennessee Coal, Iron and Railroad Co., Pratt Consolidated Coal Co. and De Bardeleben Coal and Coke Co.—have begun shipment of coal by barge to Mobile and New Orleans.

During the year one large company (the Empire Coal Co.) changed ownership entirely, and rumors became current of other sales and consolidations that were soon to be consummated, but the end of the year came without any definite announcements being made. Some of the rumors are still alive, however.

STRIPPING MINES ARE OPENED

During the year shipments were begun from the first large stripping mine to be opened in the state—the Sunlight Coal Co., of Jasper, Ala. It plans to ship a thousand tons of coal a day and loaded its first coal early in November. The company has installed a large Bucyrus steam shovel equipped with a 6-yd. dipper to handle the stripping, and the rest of the equipment is in proportion. A small stripping operation owned by the Warrior River Coal Co. was absorbed by the Brookside Pratt Mining Co., which is preparing to develop it on a large scale.

Only one other new company began to ship coal during the year—the Montevallo Domestic Coal Co., of Dogwood. Two other new companies began developments, however—the Summit Coal Co. and the Payne Bend Warrior Coal Co., both in Walker County near river transportation. Two of the established companies also began preparations for new mines—the Tennessee Coal, Iron and Railroad Co., at Blocton, Ala., and the Climax Coal Co., near Marvel. The Tennessee company also reopened a mine at Adger, and the Sloss-Sheffield Steel and Iron Co. reopened a mine at Cardiff.

Beehive oven plants at New Castle and Johns were fired up in November after having been idle for several years, and the end of the year saw practically all of the available coke ovens of the state in operation.

Railroads advanced rates on coal to most points during the year, but corresponding advances were made in all competing fields, so no loss of business to the mines of the state resulted, except perhaps to points where Alabama coal was in competition with water-carriage rates out of Pittsburgh, such as New Orleans.

During the last three weeks of the year it became evident that there is actually little idle labor in the state available for the coal mines, and if outputs are to be increased very much, the question of labor supply may become a serious one. The same state of affairs exists with respect to railroad-car supply, and the railroads would have difficulty in handling a larger tonnage with their present equipment.

Early in the year it became evident that a determined campaign would be inaugurated having for its object the elimination of convicts from the coal mines. The time seemed to be opportune, since the legislature was to have

*Keiser-Geismer Engineering Co., Birmingham, Ala.

a session and there was a large number of idle miners in the state who were calling on the labor organizations for relief. Then, too, a number of the operators claimed that the mines working convicts had an advantage over them and they had lost many of their contracts because the lessees of convicts invariably were able to underbid them.

A legislative committee was appointed to take testimony and report back to the legislature. The committee visited several of the convict mines and interviewed operators. It then formulated a report recommending to the legislature that a law should be passed removing the convicts from the mines. In spite of the committee's recommendation and all of the pressure that was brought to bear on the legislature by labor organizations and coal-mine operators, the legislature adjourned without taking the convicts from the mines.

Interest in first-aid work has become more pronounced than ever. First-aid teams have been organized in all of the large camps, and two successful state-wide meets were held during the year. The United States Bureau of Mines is entitled to much of the credit for this, as it has had an extra representative in the state most of the season, systematically going from camp to camp, giving instructions in first-aid work. Sanitation and welfare work have also received more and more attention, and the mining camps of the state are becoming not only habitable, but actually desirable places in which to live.

Arkansas

BY THOMAS H. SHAW*

SYNOPSIS—In spite of the fact that the territory forming the logical market for Arkansas coal is largely using natural gas and petroleum for fuel, the state probably produced 2,000,000 tons in the calendar year. Labor troubles are apparently over. Many small mines are being opened on a coöperative plan.

The production of coal in Arkansas for the year ending June 30, 1915, was 1,100,099.52 short tons, valued at the mines at \$3,137,211, as against 2,136,783.59 short tons for the fiscal year ending June 30, 1914, valued at \$3,531,100.97, showing a decrease in tonnage of 436,684.07 short tons and a decrease in value of \$393,889.97.

This falling off in the production of Arkansas coal was due to several causes, the most important factor being cheap oil and gas from the great fields of Texas, Oklahoma and Louisiana. Owing to the cheapness of gas compared with coal for domestic use and the fact that gas is an ideal fuel, it has almost entirely displaced coal in the local markets, and there has been a great decrease in the use of Arkansas coal for domestic consumption in the principal cities, as well as in the cities of adjoining states.

Oil has to a great extent taken the place of coal for railroad use in the Southwestern states, which have always been the principal market for Arkansas mine-run. Other causes tending to restrict the production of Arkansas coal were the mild weather during the winter of 1914, a falling off in the demand for manufacturing purposes, owing to

demoralization in the cotton industry, and labor troubles during the lockout of the miners of the Bache-Denman and interlocking companies in the summer of 1914. The surface equipment and plants at five of these mines were destroyed by a mob on July 17, 1914. These mines are full of water at this writing.

These causes were sufficient to more than offset the slight increase in railroad consumption of Arkansas coal, resulting from the strike in Colorado, the operators of that state being unable to supply fully the demands upon them.

There were employed in and around the mines for the year ending June 30, 1915, 4,228 persons, compared with 5,356 in 1914, showing a decrease in the number employed of 1,128. The greater part of these men are still idle and unable to obtain work.

MEN ARE WAITING THEIR TURN

At almost every mine in the state men are on the list waiting month after month for work. These have been the hardest times ever experienced by miners in the history of the state. Some of the oldest miners have moved to other coal fields in search of employment. However, conditions begin to look brighter, several old mines have been reopened and quite a number of small operations have been started by coöperative companies composed of miners who have long been idle.

At this time there are 141 mines being operated, including all these small mines mentioned, 77 slopes, 50 shafts, 13 drifts and 1 strip pit. These are ventilated by 55 fans and 27 furnaces, while 59 employ natural ventilation. The mines employ 2,552 miners, 1,387 company men and 289 office men and mine officials.

The average quantity of coal produced by each man employed, exclusive of company men, office men and mine officials, was 666.18 tons. The miners used 67,545 kegs of black powder, at a cost to them of \$135,090. There are 346 mules working underground, while five mines use electric motor haulage.

A favorable aspect of the coal situation in Arkansas was the decrease in the quantity and percentage of coal shot off the solid. The production of the following companies which use electric coal-mining machines was: Central Coal and Coke Co. mine No. 6, Huntington, Sebastian County, 188,316 tons; mine No. 4, Hartford, Sebastian County, 139,457 tons; Bolen Darnall Coal Co., mine No. 2, Hartford, 51,027 tons, making a total of 378,800 tons.

The Backbone Smokeless Coal Co., Excelsior, Sebastian County, produced 1,000 tons of hand-mined coal, blocked down with hammer and wedge. The three companies using machines worked on an average 230 days for the year, compared with 180 days for companies where the coal was shot off the solid. These three mines have worked full time since June 30, while the other mines have worked from three to five days a week.

LABOR IS QUIESCENT

Labor troubles seem to be ended, with the exception of the mines in the Spadra district. The men at these mines have demanded shotfirers. The operators' commissioner, the district president of the United Mine Workers of America and the state mine inspector compose a committee of three to determine at which places shotfirers shall be employed in Arkansas. What will be the outcome of this difference of opinion is at present uncertain.

*State mine inspector, Midland, Ark.

It is gratifying to note the decrease in the number of accidents. There were 7 fatal and 137 nonfatal accidents during the fiscal year. The death rate per thousand men employed was 1.75. There were 242,871.36 tons of coal mined for each life lost and 12,409.48 tons for each person injured. This compares with 15 fatal and 130 nonfatal accidents for the fiscal year ending June 30, 1914, a death rate of 3 per thousand men employed, 142,452.24 tons of coal mined for each life lost and 16,436.80 tons for each person injured.

COMPARISON OF FISCAL YEARS (ENDING JUNE 30)

Year	Production, Short Tons	Fatal Accidents
1913	1,952,461.93	10
1914	2,136,783.59	15
1915	1,700,099.52	7

Owing to the fact that many small mines are being opened, as well as several large ones that have been idle for years, I feel safe in saying that the production of coal for the calendar year 1915 will exceed 2,000,000 tons.

If all the coal mines now equipped for hoisting coal could work full time, the output next year would easily exceed 3,500,000 tons. Crawford and Washington Counties have started to produce coal for the local trade. As a whole the future prospects of coal mining in Arkansas look brighter than for several years.

Of great interest to the mining world is the suit of the Pennsylvania Mining Co., Clarksville, Johnson County, against the miners' union.

This firm has sued John P. White, all national officers, and all officers of district No. 21, including all local unions of the United Mine Workers of America, for \$600,000 on one count and for \$200,000 on a second. The company alleges unlawful conspiracy and destruction of property by the miners' union, restraint of trade and being harassed by district and national organizers since 1910, causing a loss of profit of about \$75,000 per year.

All funds in district No. 21, including those of local unions, are reported garnisheed. This suit was brought under the Anti-Trust Act of Congress of July 2, 1890.

Colorado

BY A. R. TIBBITS*

SYNOPSIS—Colorado's coal industry is improving. Not only has the production increased, but much effort is being expended in improving the living conditions of the employees. With large natural resources the state offers great possibilities for industrial development.

The coal industry of Colorado at the close of the year 1915 shows an upward trend. After a period of dull business conditions caused by the recent labor troubles and the general stagnation of other industries, the tide has turned and the coal markets are opening up and a large number of miners are back on the payrolls. Were it not for a car shortage that is holding up coal shipments, there would have been a material increase in the state's output. A mild fall and winter have further handicapped the sale of coal.

The increase of 336,347 tons of coal for the year 1915 over that of 1914 demonstrates beyond question that notwithstanding all the above factors the industry is fast resuming normal conditions.

*Denver, Colo.

Many operators have made a vigorous campaign to improve the safety and sanitary conditions of the mines, and the result is that the death rate has been materially reduced. There is a marked improvement in the relations between employers and employees, many of the striking miners have been put back to work and as fast as there is work for them, this number will be increased.

The Colorado Fuel and Iron Co. occupies a leading position in the general effort to improve conditions, and it is confidently expected that in the near future all the miners who lost their places in consequence of the strike will be reinstated.

A great work is being done to improve the sociological condition of the state's coal camps. This is especially true of the Colorado Fuel and Iron Co., which is making every effort to secure in its various coal camps not only sanitary surroundings, but also an improvement in the general living conditions.

The public-spirited manner in which this company is endeavoring by all means in its power to improve the working and living conditions of the employees is highly commendable. The improvements inaugurated are far in advance of any effort that has been previously seen in this state. The example set will undoubtedly be far reaching, as no coal-operating company can from now on afford to stay behind in this progressive and highly commendable movement.

An educational campaign is in progress among the miners and is producing excellent results. First-aid work has been enthusiastically taken up, and nearly all camps in the state have well-drilled rescue corps. Several competitions have been held between these teams, and they display a remarkable degree of efficiency. Mine rules for the guidance of employees are now generally posted at the various works, and there is a marked improvement in discipline.

EXAMINATIONS WERE RECENTLY HELD

In the month of November a series of examinations for mine officials was held in all the different coal districts. Four hundred and forty-three men took these examinations for mine examiner's, mine foreman's and fireboss's certificates. The board of examiners has decided that beginning with Jan. 1 no mine official (superintendent excepted) will be allowed to hold such a position without being properly certified. The result of the grading of the papers is not yet known. The examination was practical, and among other requirements demanded was a thorough knowledge of the coal-mining law and the use of safety lamps.

There were no labor troubles during the year and no increase or decrease in the wage scale or the price of coal. In most coal camps it is not obligatory to trade in the company stores. The Colorado Fuel and Iron Co. has established grievance committees in all its camps to hear and settle disputes that may occur between the officials and employees. Should such disputes not be adjusted satisfactorily, they can be carried to a higher authority by appeal.

An industrial board was established and a compensation law enacted by the last legislature. The industrial board is empowered to investigate alleged unfairness in the various industries and to adjust them. The authority of this board is far reaching and will show good results.

The future of the coal industry of this state is promising. Colorado is rich in coal and is surrounded by a vast territory needing fuel. With labor satisfied and equitable railroad rates there is no reason why the annual output should not reach the 20-million-ton mark. Every kind of coal exists within the state, from anthracite to lignite. All the state needs is capital, industrial peace and patient workers in chemistry to usher in a period of prosperity that cannot alone be measured in dollars and cents.

Colorado can easily be made one of the greatest coal-producing and byproduct-making states in the Union. The coal resources are scarcely touched. They are massed in thick beds and await only adequate enterprise to develop them. This commonwealth could be made a great industrial center, deep in the heart of the country, where nature is most kind, where no extreme of cold or heat depresses man or beast, where the sun shines nearly every day of the year and where the soil is rich and yields great crops of all kinds. Furthermore, this state is centrally located where no foreign enemy could ever penetrate except with extreme difficulty. Its location in this respect is ideal. Powder and ammunition plants here located could keep a great army supplied were this country at war, and no fear need be felt that the enemy could ever reach them.

Colorado, like all new communities, has had her troubles, both industrial and political. Unfortunately biased accounts have been so industriously circulated that at times they were allowed to overshadow the advantages which the state possesses in her unbounded natural resources.

SUMMARY OF THE COAL PRODUCTION OF COLORADO FOR THE YEAR 1915

Counties	Total Production	Increase	Decrease
Archuleta	1,255	.....	1,356
Boulder	938,498	.....	55,204
Delta	70,088	.....	26,985
El Paso	279,209	.....	3,933
Fremont	482,903	309,420	.....
Garfield	146,363	28,369	.....
Gunnison	443,670	40,167	.....
Huerfano	1,570,516	.....	116,000
Jackson	26,578	.....	19,191
Jefferson	119,912	.....	22,002
Las Animas	2,945,709	189,425	.....
La Plata	116,952	.....	18,561
Mesa	87,067	.....	71,200
Moffat	300	.....	.....
Montezuma	1,000	13	.....
Pitkin	49,435	.....	21,311
Routt	841,340	185,462	.....
Weld	416,975	.....	60,676
Total	8,537,770		
Total production, 1914.....			8,201,423
Increase, 1915			336,347
Average number men employed.....			12,677
Total number of days worked.....			168

Illinois

Material advancement in the Illinois coal industry was made during the year by the formation of several organizations in major-producing districts to maintain production more in accordance with market demands and to furnish statistical information as to costs and selling prices. Progress has been effected in uniform costs, accounting for mine and retail yards, uniform sizing of the mine output, standardization of sales contracts and restriction of production.

A very noticeable change is the general disposition of operators and mine owners to favor coöperative measures. Concrete results in stabilizing selling conditions have already been achieved, and operators look forward with confidence to still further improvement along these lines.

Freight disturbances have been acute. The general Western rate advance decision added 10c. to the price of coal in the larger portion of the Southern and Western country served by Illinois mines in competition with docks and Southern coal. A proposed advance of 5c. per ton for intrastate business has been blocked thus far.

Readjustments of freight rates have as a rule been diametrically opposed to the interests of Illinois shippers. Illinois domestic- and steam-coal markets for the first four months of the year were in a bad way. Domestic demand was negligible during the summer months, and steam business showed only slight improvement during the late summer and early fall. From October to December, however, there was a real betterment in the steam trade, which improvement was most pronounced in the fine coals, which showed a higher range of prices than ever before at the same time of year. There was at the end of the year a growing scarcity of tonnage.

Domestic coal requirements also broadened in the last three months of the year. Prices were well supported, notwithstanding a mild and open winter. Reduced quantities of free coal have been consigned to Western distributing centers as compared with previous years. An accumulated tonnage has been held at the mines, waiting for a proper price rather than having to dump it into markets at a sacrifice. As a whole, Illinois coals have fluctuated less in price this year than previously. Mine labor has been plentiful until recently, and car supply has been unimpaired.

Indiana

By MICHAEL SCOLLARD*

SYNOPSIS—The production of coal in Indiana was much better during the past year as a whole than the first few months indicated. In the first half of the season many mines were closed, and others worked short time, many of them at a loss. The latter part of the year, however, was more prosperous, and the entire production is estimated at over 15½ million short tons.

The condition of the coal-mining industry in the State of Indiana during the fiscal year ending Sept. 30, 1915, was much better than had been expected. During the first 7 months there were 25 fewer mines in operation than during the latter part of the year of 1914, owing to the general business depression and the ruinous competition from which the coal business has suffered for years in this state.

There were 8 mines abandoned during the fiscal year, and many were closed temporarily, as the small demand would not justify the expense of keeping the mines opened. Of those operating, few were working full time, and the majority were in operation less than half time. As a result of these conditions, many miners were out of employment, and mine property in many instances was allowed to depreciate. However, about the middle of July, 1915, the coal-mining conditions grew much better and have continued to improve.

Notwithstanding the time lost during the summer months on account of no demand for coal, a number of lo-

*Mine inspector, rooms 31-34 State Capitol, Indianapolis, Ind.

cal strikes and some shortage of railroad cars in the southern part of the state, the total production of mines employing 10 or more men was 15,346,921 short tons. The estimated production of mines employing less than 10 men was 350,000 tons, making a total output of 15,696,921 short tons. The wages paid to miners was \$13,420,071.78. This does not include wages paid in small mines throughout the state.

The average number of miners employed during the year was 20,702. Of the total production of coal 96,567 short tons was from the Block seam. The production of block coal is steadily decreasing, and at the present time this grade of fuel is consumed principally in this state. Unless new block-coal mines are opened, the production of this coal will continue to decrease, as practically all the block mines are old and will not be large producers at any time.

MARKET CONDITIONS WERE UNSATISFACTORY

Owing to a stagnated condition of the coal market, operators who could work their mines at a profit were considered fortunate. It is difficult to ascertain just exactly what the average selling price of coal was during the past year, but it is the consensus of opinion that the average price of No. 4 and No. 5 mine-run was from \$1 to \$1.15 per ton, f.o.b. at the mine. With demand for coal steadily increasing, the operators agreed on a system of reporting their sales and prices with a view to getting a uniform price for their production, and the future looks brighter.

The total consumption of coal in this state was 9,297,723 tons, while 6,049,198 tons was shipped to other states. Of the production sold outside of the state, the major part went to Illinois, principally the Chicago market.

Within the past two years steam shovels have been introduced into this state, and during the fiscal year ending Sept. 30, 1915, extensive work has been done in stripping coal. At present there are several large steam shovels in the state which are operating practically all the time. There are two or three stripping mines that are removing 25 ft. of overlying strata and have a capacity of 250 tons of coal per day.

During the year 52 fatal accidents occurred. The production per fatality was 295,133 tons. Two deplorable accidents resulted from falls of slate, one at Speedwell No. 2 mine, operated by the Lower Vein Coal Co., of Terre Haute, and the other at the Ayrshire No. 7 mine, operated by the Ayrshire Coal Co., of Oakland City. Four men were killed in the Speedwell mine on Dec. 3, 1914, while on their way to the shaft bottom. They were near the motor parting on the main haulage road when they were caught by a large fall of slate. Two timbermen and the mine boss were killed at the Ayrshire No. 7 mine Mar. 7, 1915. They were engaged in cleaning up the mine and timbering.

While the fatalities during the fiscal year ending Sept. 30, 1915, were large, it is gratifying to note that during the five months in which the mine-inspection department has been under the Industrial Board, there were 14 fatal accidents. During the first five months of this fiscal year there were 29 fatal accidents. With the workmen's compensation act in force, additional safety measures are being promoted both by the Industrial Board and the mine managements, especially by the companies carrying their

own risk under the compensation act. The increased interest and attention that is being given to the safety of the mines no doubt will be instrumental in the future in largely reducing the number of accidents occurring in the mines of the state.

✽

Iowa

BY L. E. STAMM*

SYNOPSIS—There has been scarcely any change in the coal production of Iowa for many years. Little car shortage and no labor troubles in the industry have been experienced during the past year, and the prospects for 1916 are bright.

Of late years there has been but little change in the conditions of the Iowa coal industry. Probably this is owing to the fact that many mines are being operated in the neighboring state, Illinois. These mines have to look largely westward for the sale of their output. Within the last few years a great deal of Illinois coal has been shipped into Iowa, the Dakotas and Nebraska.

Freight rates have been in favor of the Illinois producer and have enabled him to get into territory that was formerly held by the Iowa coal operator. Also within the past few years Colorado and Wyoming have been mining and shipping coal into the Dakotas and into Nebraska. This has put Iowa between two active coal fields, with the result that not much increase has been made in the tonnage of coal produced by the Iowa mines for some years. This is not because of the inferior quality of Iowa coal, for the fuel produced in this state is high-grade bituminous that burns and stocks well, but the trade decline results from the conditions mentioned.

The growth that has been made in the Iowa coal industry, however, has been a healthy one. Between two and three hundred mines are in operation in this state, and notwithstanding adverse freight rates and keen competition, the mines of Iowa are in better condition today than they have been for some years. Better equipment is being used than formerly, a number of mines having been recently equipped with electric hoists and electric haulage, as well as cutting machines.

Considerable interest has been manifested in first-aid and mine-rescue work this past year in the state. J. J. Forbes, of the Government service, has been in Iowa for some time instructing the miners, not only in first-aid work, but in the care necessary in order to minimize accidents in the mines. In this he has had the hearty support of the operators, and so satisfactory has been his work that recently by request of miners and operators Mr. Forbes was granted an extension of time and will remain in this state until Feb. 1.

In former years it has been the custom and the provision of the law for the mine inspectors to gather the statistics relative to coal production and accidents for a fiscal year ending June 30. However, the 36th General Assembly of Iowa changed the provisions of the law, and the statistics will now be collected for the calendar year.

The figures for the coal production for 1915 will not be available until about Feb. 1, 1916, as the blanks are required to be sent to the operators on Jan. 1 and they are given one month for return. However, from statistics

*Secretary, Department of Mines, Des Moines, Iowa.

gathered for the last half of the year 1914 and from general conditions of the coal industry at this time, it is believed that there will be but little change either in the coal tonnage produced or in the number of men employed in and around the mines. The prediction is made, therefore, that the production for 1915 will approximate 7,500,000 short tons and show something like 16,000 men employed in the industry. While there will be a little more coal produced than in 1914, yet it is quite likely that the accident list will show a material reduction.

BUT LITTLE CAR SHORTAGE

Few complaints have been registered this fall regarding a car shortage. October saw some trouble in this respect with a few companies. Other firms report no car shortage to speak of. Companies doing a railroad and commercial business have reported good sales all fall. Companies in the state doing only a local business have had to run counter to warm-weather conditions, and these have not been fruitful of much business. Altogether the coal situation this year differs but little from that of former seasons.

Few labor troubles occur in the coal-mining industry of Iowa. Those that do are local and are usually settled by the district and state officers of the miners and operators without stopping work at the mines.

Two years ago the miners in this state kept at work while their representatives and those of the companies were perfecting a new wage and working agreement. This proved of benefit to both the operators and the miners, the mines being kept in better condition and the men being provided with work instead of being idle while the agreement was under consideration.

Just what will be done this coming spring when the time comes for the making of a new agreement, no one seems to know. Representatives of the miners and the operators will meet in Des Moines in April, 1916, to make a new wage and working agreement. The provisions of this contract will depend largely on the attitude and arrangements which are perfected between the miners and operators of the Eastern bituminous mining states.

The outlook for increased coal production in this state for 1916 appears good. Much prospecting has been done in Hardin County, and it is quite likely that considerable coal development will be made in that locality this coming year. While Mine No. 10 of the Phillips Coal Co. in Dallas County has suspended operations for a time, the loss in this county will be more than offset by the production of the new Dallas Coal Co.

In Polk County the Maple Block Coal Co. closed one mine in the summer of 1915, but opened another. In Lucas County the coal tonnage is rapidly increasing and more new mines are to be opened soon. Mine No. 18 of the Consolidation Coal Co., at Buxton and the plant of the Spring Hill Coal Co. are becoming large producers.



Kansas

By JOHN PELLEGRINO*

During the fiscal year ending June 30, 1915, there was 6,701,426 tons of coal produced in the State of Kansas. The coal production by counties was as follows: Crawford, 4,631,236 tons; Cherokee, 1,784,637; Leavenworth, 184,226; Osage, 78,827; Linn, 18,000; Franklin, 2,500; Bourbon, 2,000.

*State mine inspector, Pittsburg, Kan.

There were 27 fatal accidents in and around the Kansas mines, these being one fatal accident for every 247,831 tons of coal produced. There were 716 nonfatal accidents during this year, making an average of one nonfatal accident for every 9,359 tons of coal produced.

The coal production of the state has decreased slightly because of labor troubles and the companies shutting down part of their mines on account of not having a market for their coal.

Strip mining by steam shovels in Kansas is affecting the deep mining to a great extent. Crawford County produced 421,348 tons of strip coal and Cherokee County 195,287 tons during the fiscal year ending June 30, 1915, making a total of 616,635 tons of this fuel. The production of strip coal was increased during the year in the two counties by 232,780 tons, which is 9,767 tons more than Crawford County alone produced in the previous year. At present there are 22 steam shovels in the State of Kansas, and each averaged 28,030 tons of coal during the year.

Shotfiring by electricity is progressing favorably. Three mines are daily using a mechanical device to fire their shots. This is operated from the surface, thus preventing accidents to shotfirers. Shotfiring by this method also applies to shooting the coal at the strip mines, and since Oct. 20, 1915, all of the strip-pit operators in the state are having their shots fired by electric batteries to eliminate accidents as far as possible.

First-aid and rescue work in Kansas are yet in their infancy, and there is only a small supply of rescue apparatus around the mines that can be obtained in case of an accident. The state has a mine-rescue station at West Fourth St., Pittsburg, Kan., and rescue car No. 4 of the United States Bureau of Mines has the supervision over it. Owing to the lack of funds for carrying on this work, when this car is out on one of its instruction trips, there is nobody left at the station.

Car No. 4 of the United States Bureau of Mines has been making a training trip in the vicinity of Pittsburg since Oct. 16, 1915. Stops of one week each were made at Turk, Scammon, Roseland, Weir, Radley, Girard, Franklin, Arma, Mulberry, Gross and at the University of Kansas, at Lawrence. Taking into consideration the present conditions in this field, the car has had quite a successful trip. Notwithstanding the fact that nearly all the training has been done at night, a large number of men received first-aid and mine-rescue instruction. First-aid societies were organized at Turk, Carona, Radley and Arma, and it is expected that in a short time each mining town in this field will have its first-aid association.



Kentucky

By C. J. NORWOOD*

The coal production of this state for 1915 will be about 21,375,000 tons, of which the eastern portion produced a little over 14,500,000 tons. Though these figures show a gain over the preceding year's production, business as a whole fell much below expectations.

At the beginning of the year a general depression was experienced throughout the state, owing to the European War, but the latter part of the year showed an improved demand permitting the mines to work more steadily.

*Chief mine inspector, Lexington, Ky.

The Big Sandy and Tug Fork districts in the eastern part of the state were affected by car and labor shortage, and though the production from these districts showed an increase of over 1,000,000 tons, it was less than it would have been had there been plenty of cars and enough labor.

There is a good demand for byproduct coal at the mines on the Big Sandy and Northfolk of the Kentucky River. There are enough contracts on hand to keep most of the mines producing throughout 1916 if sufficient labor can be obtained.

The coke production in the southeastern part of Kentucky was good and showed a marked increase in the latter months of the year which offset the decrease in the spring. The net increase exceeded 1,000,000 tons.

EASTERN COAL FIELD PROGRESSES RAPIDLY

The general outlook in the eastern field is very bright. The principal gains in production were made in Harlan, Letcher and Perry Counties, distributed as follows: Harlan, 20 per cent.; Letcher, 60 per cent.; Perry, 90 per cent.

Unsatisfactory conditions prevailed in the western part of the state. From the present outlook there will be a decrease of about 950,000 tons. The causes for this are said to be the depression in the cotton market and also in the manufacturing plants in the South, the introduction of fuel-economizing locomotives by railroads using western Kentucky coal and the mild weather that prevailed throughout the year. The high cost of production and the increased freight rates to the South are also claimed as factors in the low production.

There were few labor disturbances in the state during the year. A short strike occurred in both Bell and Floyd Counties, each affecting a single company, but these had little effect on the total output. No large mine fatalities occurred, and the total number of deaths was relatively small.

Maryland

BY WILLIAM WALTERS*

While at the present time it is impossible to give the exact figures of the coal production of Maryland, the tonnage will be somewhat larger for 1915 than for 1914, when it was below the 4-million-ton mark. There were several coal mines idle during the greater part of the year. Some of these are good producers, and from the best information available a great many will report a decrease, as the demand for coal was not general and there were no unusual activities in the industrial world at large. Not only was there a decrease in many localities in the amount of coal mined, but prices were not at all satisfactory. The total output for the year may reach 4 million tons.

The Consolidation Coal Co. will report a large increase, as its mines worked full time during the entire year, producing about 2,040,000 tons. The number of employees in the mines of the state will not be materially changed from that of the year 1914, which was about 5,775.

As to the fatalities during the fiscal year beginning May 1, 1915, there were 6 reported up to Dec. 20, 1915.

*State mine inspector, Frostburg, Md.

Three were caused by falls of top rock, one by cars, one by electrocution and one by dynamite caps. The reports of nonfatal accidents show a considerable reduction. There were no labor troubles of any kind in the state of Maryland during the past year.

Michigan

BY THOMAS KANARY*

The estimated tonnage of Michigan for 1915 will be about the same as that for last year—1,250,000 tons—with the indications at the present time for a much greater tonnage in 1916.

There were no labor troubles in the state during the past year, and the percentage of car supply during 1915 was 100 per cent.

The operators of the state have taken up the mine-safety question to a considerable extent. I was successful in having a government mine-rescue car sent into this state the past summer. Instructions were given in mine-rescue and first-aid work, and mine-rescue and first-aid teams have now been organized with the happiest of prospects at all the mines in the state.

Missouri

BY J. P. HAWKINS†

The coal production in Missouri for the year just passed will be about 4,000,000 tons. The mild weather that has visited Missouri for the past 60 days will affect the production somewhat, but not enough to alter the figures materially. About one-half of the coal that is mined in the State of Missouri is "powder mined," while approximately 1,000,000 tons are produced by hand.

The history of the Missouri coal industry dates back to 1806, when coal was first found on the banks of the Osage River. Since the discovery, this state has produced nearly 125,000,000 tons of coal, and at the present rate of consumption it is figured that there is enough coal to last 9,000 years. The banner year for production was in 1905, there being 4,381,956 tons mined, valued at \$7,147,665.

Much interest is being taken in the coal industry, and every effort is made for the improvement of the work and for the safety of those employed. The labor troubles in 1915 were of little consequence.

Montana

BY JOHN SANDERSON‡

The coal industry of the State of Montana for the year 1915 has not been all it might have been. This was partly because the railroads were not operating to their full capacity and the winter of 1914-15 being mild, the demand for coal on the commercial market was not particularly good.

The railroad mines of the state, which include those of the Republic Coal Co., of Klein, Musselshell County, owned by the Chicago, Milwaukee and St. Paul Railroad Co., those of the Northwestern Improvement Co., of Red Lodge, Carbon County, owned by the Northern Pacific Railroad Co., and those of the Cottonwood Coal Co., of

*State Mine Inspector, St. Charles, Mich.

†Secretary, Missouri Bureau of Mines, Jefferson, Mo.

‡State coal-mine inspector, Helena, Mont.

Stockett, Cascade County, owned by the Great Northern Railroad Co., consume their own product. The rest of the mines of the state are dependent on the commercial market, which is governed to a great extent by the weather conditions.

The year 1914 showed a decrease in tonnage of 427,000 tons below the 1913 output, and the output for 1915 will be below that of 1914.

There are various causes for these conditions, one being that the winters of 1913-14 and 1914-15 were very mild, another being that a great many industries of the state are adopting the use of electricity, all of which has a tendency to curtail the coal output.

There is also a great amount of coal shipped into the state from Wyoming, the natural conditions there being so much better than those in Montana that Wyoming operators are able to produce their coal at a much less cost than Montana coal owners, thereby enabling the former to enter this market.

There is also considerable coal shipped in from Canada, conditions there also being such that the Canadians are able to produce coal at a much less cost than the Montana operators.

SUMMARY OF MONTANA COAL MINING IN 1915

Machine men and helpers employed.....	183
Loaders employed.....	717
Pick miners employed.....	1,162
Inside daymen employed.....	801
Outside daymen employed.....	536
Total number men employed in and around mines.....	3,399
Tons produced per man employed per day.....	4.1
Total tonnage.....	2,697,054
Total value.....	\$4,285,146.26
Total number of lives lost.....	10
Total number seriously injured.....	44
Tons coal produced per life lost.....	269,705
Tons coal produced for each serious accident.....	61,297
Men employed per each fatal accident.....	340
Men employed per each nonfatal accident.....	77
Men killed per 1,000 employed.....	2.9
Percentage injured seriously per 1,000 men employed.....	13
Kegs of powder used.....	44,354
Tons of coal mined by machine.....	1,408,343
Tons of coal mined by hand.....	1,288,711
Per cent. of coal mined by machine.....	52
Per cent. of coal mined by hand.....	48

New Mexico

BY REES H. BEDDOW*

The production of coal in New Mexico for the fiscal year ending Oct. 31, 1915, was greater by about 31,669 tons than that of the preceding 12 months. The following table, which is based upon nearly complete returns from the various companies, shows the coal and coke production, number of accidents, fatal and nonfatal, other statistical information for the fiscal year.

SUMMARY OF COAL AND COKE PRODUCTION OF NEW MEXICO FOR THE YEAR ENDING OCT. 31, 1915

Number of mines in operation.....	53
Number of mines temporarily closed down.....	3
Number of new mines started.....	8
Bituminous coal produced, tons.....	3,061,379
Sub-bituminous coal produced, tons.....	758,559
Anthracite coal produced, tons.....	38,616
Total coal produced, tons.....	3,858,554
Increase from last year's production, tons.....	31,669
Coal mined by hand, tons.....	3,376,517
Coal mined by machine, tons.....	482,037
Total number of machines used.....	35
Coke produced, tons.....	364,873
Total number of coke ovens.....	980
Number of employees in and about the mines.....	4,609
Number of employees about the coke ovens.....	255
Number of fatal accidents.....	21
Number of nonfatal accidents.....	185
Tons of coal mined for each life lost.....	183,740.66
Number of employees for each life lost.....	231.6
Number killed for each thousand employed.....	4.31
Approximate value of coal production.....	\$5,516,550.00
Approximate value of coke production.....	1,199,776.58
Total value.....	\$6,716,326.58

*State Mine Inspector, Gallup, N. M.

North Dakota

BY JAY W. BLISS*

The production of lignite coal during the year 1915 is estimated as being close to 600,000 tons, a greater amount by 50,000 tons than has been mined in any year heretofore. The output has doubled in the last 7 years, only a little over 300,000 tons being mined in 1908.

There have been remarkably few accidents during the past year, and but one fatality has been reported.

One hundred and twenty mines have been in operation, varying in size from very small ones employing but three or four men to large operations employing 400 men. The total number of men engaged has averaged over 850 during the six winter months and 460 during the summer months.

An experimental station has been operated by the state at Hebron for a number of years under the direction of E. J. Babcock, dean of the College of Mining Engineering of the State University, and much valuable information has been collected, and many practical experiments have been performed.

Briquetting is one of the uses to which lignite coal will inevitably be put, and the station is equipped with a commercial-sized plant. A briquetting plant has been built at Minot and has proved successful.

Ohio

BY J. M. ROAN†

SYNOPSIS—The total production of coal in Ohio was about 22,000,000 tons, which output shows an increase over last year. The general results were not as satisfactory as had been hoped for. However, the outlook at the end of the year was quite promising. A safety campaign has materially reduced the number of accidents.

From advance reports received from the various mining localities throughout the state relative to the estimated tonnage of coal for the year 1915, indications point to a very material increase as compared with the production of coal for 1914. However, the tonnage at this time cannot be accurately estimated, owing to the long suspension in the operation of mines in the eastern Ohio district which resumed in the months of May and June and the suspension in the operation of a large number of mines located in the Hocking Valley district for the last six months of the year 1915.

At the beginning of 1915 prospects were not bright for a very decided increase in the coal production of the state over that of the previous year, when the tonnage decreased over one-half of the normal tonnage reported for the year 1913, the total tonnage for which amounted to 36,285,468 tons, as compared with 18,736,407 tons reported for the year 1914.

The financial and industrial condition of the entire country was responsible in a measure for the depression in the coal industry for the first half of 1915. The protracted suspension of the mines located in the Counties of Belmont, Harrison and Jefferson continued through 1915, until a satisfactory wage-scale agreement was entered

*State engineer, Bismarck, N. D.

†Chief deputy and commissioner of mines, Columbus, Ohio.

into between the operators and representatives of the United Mine Workers at Cleveland, Ohio, May 11, 1915. However, the trade even at this time did not justify the resumption of many of the large mines of this district, and some remain suspended at the close of the year. After a long suspension, such as was experienced in this district for 18 months, it requires from 60 to 90 days for mines to be placed in condition to produce anything like the normal output of which they are capable.

Practically the same conditions prevailed in the Hocking Valley district, composed of the Counties of Athens, Hocking and Perry, when in July, especially in Athens County, a number of large mines suspended operations and have been idle since. Inability to produce coal in competition, on account of local mining conditions in general, but principally the railroad rate now in operation in that district, is held responsible for the wholesale closing of so many of the large operations in this locality.

Neyer in years were mining conditions in this section of the state so acute. Over 5,000 men were suddenly thrown out of employment, and want and suffering were felt for several months. The situation became so serious that state aid was solicited, and the work of collecting and distributing supplies was done in a systematic manner through the agency of the office of the adjutant general of the state with the aid of a corps of able assistants. The industrial commission, through the mining department and the department in charge of the free employment bureaus of the state, was also called upon to assist in securing employment for the miners who were without means of obtaining a livelihood and who were in an absolute state of want.

With conditions in the different mining districts of the state assuming somewhat near the normal condition, the outlook for the year 1916 is promising for the coal trade, and the tonnage will undoubtedly be much higher than that reported for the years 1914 and 1915.

SCALE SETTLEMENTS

On April 12, 1915, a mining scale was signed at Coshocton, Ohio, by representatives of the miners and operators of that district, the mines of which had been idle since April 1, 1914, when the wage agreement between the miners and operators expired.

On May 11, 1915, another wage-scale agreement was signed between the representatives of the miners and operators of the eastern Ohio district at Cleveland, Ohio. This ended a suspension of the mines in that district that had existed for a period of 18 months.

The signing of these two wage agreements ended two of the most protracted suspensions of mining districts which the state had experienced in years and was due largely to the enactment of a law in February, 1914, which changed the system of weighing the coal and the method of paying for it.

Advance reports received from the various mining districts indicate a decrease in the tonnage of the Counties of Athens, Hocking and Perry. The mines of Belmont, Harrison and Jefferson Counties will report increases as compared with the tonnage reported for the year 1914. Other mining districts of minor importance as regards production will also show increases.

The number of persons employed in the state for the year will probably show a decrease, due to the suspensions in two of the largest coal-producing districts in the

state for at least half of the year. There was no great demand for labor in the mines after these mines opened up in June and July, and a great many of the miners sought employment in other mining localities and states. The same holds true of the Hocking Valley district, where over 5,000 men were out of employment for several months of the latter part of the year, some of whom sought other employment. The close of the year finds 2,000 men still out of work in this district.

On an average the mines of the state worked only about one-half time. Especially in the districts already mentioned, reports may indicate that they did not even average half-time. The mines of the Guernsey or Cambridge district operated practically the entire year, but not nearly full time, some of the mines operating only a few days of each month, until the fall and winter months, when they averaged nearly full time.

There was very little Lake trade reported from the Hocking Valley district for the year. In eastern Ohio the mines were so late starting operations that little Lake trade was in evidence there, and shipments were slow when the mines did resume operations. The Lake trade from the Cambridge district was about 60 per cent. of the normal.

CAR SUPPLY

The car supply in the Hocking Valley district was equal to the demand, owing to so many of the large mines being idle a greater portion of the year. In eastern Ohio, when the coal trade became more brisk, there was a shortage in the car supply at nearly all of the mines, causing them to work short hours. In the Massillon district frequent complaints of a shortage in the car supply were made, especially of the mines located on the Baltimore & Ohio R.R.

In the Straitsville district, where many of the large mines were idle a great portion of the year, the car supply was adequate to meet the demands, while in the Cambridge district the car supply was 100 per cent. for the first 10 months of the year and 95 per cent. for the months of November and December. The car supply for the Tuscarawas district was 100 per cent. on all railroads except the Baltimore & Ohio, where it has only been 50 per cent. normal since Nov. 1. During the latter part of the year in the Jackson district there was a shortage of about 25 per cent. in the car supply.

ACCIDENTS AND THEIR CAUSE

For the year ending Dec. 22, 1915, 60 fatal accidents were reported to the mining department; in addition to this number two accidents which occurred in 1914 terminated fatally in 1915.

Falls of roof were responsible for 30 deaths; falls of coal, 6; mine cars, 10; motors, 4; mining machines, 2; electricity, 4; shot blowing through the rib, 1; returning too soon to an unfired shot, 2; and to miscellaneous causes, 1. In 1914, 58 fatalities were reported. Falls of roof show a decrease of 9, falls of coal an increase of 3, mine cars 3 and electricity an increase of 3.

For the year ending Dec. 22, 1915, prosecutions for violations of the mining laws were reported, and fines amounting to \$210 were assessed and collected and deposited with the state treasurer as required by law.

There were no labor troubles of any importance, with the exception of a few minor strikes of a local nature

resulting in a suspension of only a few days, although there was a suspension of operations in the mines of eastern Ohio and the Hocking Valley districts, the cause of which has already been commented upon.

MINE FIRES

Through failure to comply with an order of the mining department a disastrous fire occurred on May 29, 1915, in the Sunday Creek Co.'s mine 211, located at Poston, Athens County, Ohio. Nos. 7 and 8 west entries were being driven to connect with Nos. 7 and 8 east entries, which had been cut off by a squeeze and which were known to contain firedamp. Orders had been issued to drill in advance of the faces of Nos. 7 and 8 west entries and to use no open lights in those entries. Contrary to this order open lights were being used when a hole at the face of No. 8 west entry penetrated the excavations containing firedamp. The gas issuing from this opening was ignited by the open lights being used by one of the drillers.

Instead of attempting to stop the flow of the burning gas, the men left this entry to notify the management. In the meantime the face of the entry and a partially loaded mine car standing near-by ignited, generating large quantities of smoke and noxious gases. Attempts were made to confine the fire to a small area by erecting stoppings, but without success, as the gases generated overcame several of those engaged in the work. A similar attempt to erect stoppings on the main intake and return at Nos. 5 and 6 west entries also proved unsuccessful, but the mine was finally sealed.

It was reopened Sept. 14, 1915, under the direction of the mining department. In the exploration and examination of the mine the Westphalia 2-hr. type breathing apparatus was used and a distance of approximately 2 mi. was covered underground, which probably establishes a record for distance covered continuously with breathing apparatus.

On the morning of Aug. 21, 1915, the fireboss employed by the Poston Consolidated Coal Co.'s Poston No. 6 mine at Millfield, Athens County, Ohio, discovered a fire that had gained considerable headway at the face of east N. F. entry, due probably to the ignition of a gas feeder by a shot fired on the previous evening. Efforts were made to seal off the fire section by erecting stoppings. This mine generates firedamp in considerable quantity, and while a temporary stopping was being erected, a slight explosion occurred, necessitating a discontinuance of the efforts to erect stoppings in the face entries.

The mining department, having been notified of the progress of the fire, advised that the ventilation be continued pending the arrival of a force of inspectors with the mine-rescue car and its equipment, but in disregard of this advice the mine management sealed the entire mine.

The mine remained sealed until Oct. 14. During this interval the progress of extinguishing operations was noted from time to time by means of chemical analyses by the mining department of samples of the atmosphere in the mine, the samples being collected by means of a pipe through the seal at the top of the main shaft. These analyses, in combination with the knowledge of the physical conditions in the mine, proved of considerable assistance in determining the probable extent and duration of the fire. The final analysis before reopening the

mine showed oxygen content of less than 5 per cent.; carbon monoxide about 0.4 per cent.; carbon dioxide about 2.5 per cent. and methane about 21.5 per cent. The seals were removed on Oct. 14, and ventilation restored; on Oct. 15 the chief deputy and a force of inspectors equipped with the Westphalia breathing apparatus entered the mine. The exploration was accomplished with considerable difficulty, water to a depth of 3 ft. or more being encountered at the bottom of the shaft. Heavy falls of roof throughout the fire zone made progress difficult.

Upon the completion of this examination permission was given to proceed with the necessary repairs preparatory to a resumption of operations. After the examination of the fire zone in this mine by the exploring party, it was the opinion of the mining department that had the advice given by it to continue the ventilation pending the arrival of the mine-rescue car with a force of inspectors been heeded by those in charge, the fire could have been extinguished from the inside with no further loss than a possible discontinuation of operations in the affected territory for a short time.

BULLETINS ISSUED DURING THE YEAR

On Jan. 6, a bulletin in regard to the legal use of carbide throughout the mines of the state was issued. This was deemed necessary owing to so many flagrant violations in its use and a serious accident from the use of this means of lighting being reported whereby an employee was seriously burned from the careless handling of the refuse of carbide, almost causing the loss of the sight of both eyes. Inspectors were instructed to enforce the law and to prosecute violations.

On Nov. 22 an order was issued relative to the checking of persons entering and coming out of the mine, especially in gaseous mines and all mines where shafts were used as the only means of ingress and egress. Attention was called to the fact that it was the duty of the company and mine committee to enforce in some way a strict compliance with this rule. This system is in use in a large number of mines and is working satisfactorily.

On Nov. 22 a bulletin was also issued relative to precautions being taken on account of the approach of cold weather and the dangers attending it, requesting mine managements to make thorough inspections of their mines, to see that all dust was wet down, and wherever possible to heat the air and furnish moisture by placing sprays on the inside or turning in the exhaust steam from their boilers.

On Dec. 6 a bulletin was issued relative to the distribution of rules and excerpts of the mining laws at the different mines which have been published by the mining department in eight languages. In this way it is hoped that many of the fatalities will be avoided, as it will instruct all foreigners in their own language of the dangers surrounding their vocation and means of safeguarding their lives.

MATTERS OF SAFETY

While there has been no direct movement of the operators of the state as a body engaging or entering into any special safety-first movement, many of the large coal companies have employed safety bosses at their mines to patrol the faces of the working places, and as a result better timbering is being done, dangerous machinery is being guarded, explosives are being handled with more

caution, escapeways are being kept in safer condition, better discipline is being established and more care exercised in the handling of trips and a closer watch is being kept as to the manner in which the miners shoot their coal.

In the Cambridge district the operators have given safety questions more attention in the past year than ever before. Safety foremen have been employed in addition to the regular mine foreman and fireboss. A rule is also in force throughout this district whereby all miners are required to snub or block their coal before shots are fired.

In Belmont County extra foremen visit the working places each day in place of every alternate day; also in cases where new men are employed or dangerous places are found, they are looked after twice daily. Others have posted signs in and out of the mines, such as "Safety First," "Post Your Slate," "Remember Your Family," "Look Out for the Motor" and many other similar signs.

Summing up the whole question of safety to persons employed in and around the mines of the state, we are convinced that there is a desire both on the part of the employer and the employed to observe the rules of the mining department and the provisions of the mining laws for the preservation of both life and property. Also, taking into consideration the condition under which many of the large mines resumed operation after so long a period of idleness, it is indeed gratifying to report only 60 fatalities for the year at this time.

Oklahoma

By EDWARD BOYLE*

SYNOPSIS—The coal tonnage produced in Oklahoma for the fiscal year ended June 30, 1915, was over 400,000 tons less than that of the preceding year. Machine mining increased slightly. No labor difficulties of any extent were experienced, and the relations between employer and employee are cordial. Coal produced by stripping will doubtless in future contribute largely to the state's output.

In the year ended June 30, 1915, 3,321,795 tons of coal was produced from the mines of Oklahoma. This is a decrease in production from the previous year of 410,757 tons. Of the 1915 output 2,551,041 tons was obtained by pick mining, while 770,754 tons was obtained from machine mines. This is an increase of machine-mined coal of 82,064 tons, or 2.5 per cent. over the production for the fiscal year 1913-14. The machine-mined coal now constitutes 23.2 per cent. of the total coal output.

The subdivided production of the various grades of coal marketed is shown in the following table:

District	Pick-Mined Coal				Totals
	Lump	Nut	Pea and Slack	Run-of-Mine	
No. 1.....	156,164	24,373	107,882	1,005,649	1,297,212
No. 2.....	265,703	76,166	210,136	418,313	970,318
No. 3.....	24,107	9,292	28,708	224,548	286,655
Total	445,974	109,831	346,726	1,648,510	2,551,041

District	Machine-Mined Coal				Totals
	Lump	Nut	Pea and Slack	Run-of-Mine	
No. 1.....	99,197	4,964	35,776	4,551	144,488
No. 2.....	37,346	10,519	22,807	109,092	179,764
No. 3.....	68,323	18,016	49,422	310,741	446,502
Total	204,866	33,499	108,005	424,384	770,754
Total for state..	650,840	840,143	454,731	2,072,894	3,321,795

*Chief mine inspector, McAlester, Okla.

Reports were received from 80 mines, of which 39 showed a production of 30,000 or more tons per annum. There were 19 mines with an average daily output of over 300 tons. The largest average daily production is 771 tons and is reported from the Rock Island No. 40 mine.

The coal industry gave employment to 7,669 men, divided as shown in the following table:

Dist.	Machine Mining Company				Pick Mining Company				Grand
	Miners	In-side	Out-side	Run-ners	Miners	In-side	Out-side	Total	
No. 1..	144	90	49	40	323	1,689	734	328	2,728
No. 2..	217	151	59	47	474	1,339	699	362	2,400
No. 3..	685	258	100	93	1,136	416	128	64	1,744
State	1,046	499	208	180	1,933	3,444	1,561	754	5,736

The work at the mines was more intermittent than usual. The following table shows the average time worked by the miners in the various districts. It will be observed that the average miner in the pick mines of district No. 1 received the steadiest employment—194 working days per year—while his fellow miner in operations of the same character in district No. 3 secured but 148 days of work. The table also shows the number of miners employed in each district and the average daily tonnage of coal loaded by each. The word "miners" is here understood to mean only the men who load the coal.

TIME WORKED AND PRODUCTION PER MINER

Dist.	Machine Mining				Pick Mining			
	Days Worked	Yearly Production per Loader, Tons	Num-ber Miners	Average Daily Turn, Tons	Days Worked	Yearly Production per Loader, Tons	Num-ber Miners	Average Daily Turn, Tons
No. 1..	154	1,003	144	6.52	194	768	1,689	3.96
No. 2..	161	824	217	5.14	189	724	1,339	3.84
No. 3..	157	652	685	4.15	148	689	416	4.66
State	157	737	1,046	4.69	187	741	3,444	2.97

As in previous years, Pittsburg is the leading coal-producing county, but Latimer, Okmulgee and Coal Counties follow closely in order.

Haskell County produced no coal last year, as the Sans Bois mines at McCurtain were idle. These mines, however, are being put in shape to operate, and this county will undoubtedly show a considerable production at the end of the next fiscal year. The major portion of the machine-mined coal was produced from the flat Henryetta seam. In many of the mines of the McAlester field the extremely heavy pitch makes the use of machines almost impossible under the present system of mining, and consequently most of the coal is still obtained by pick mining. However, as the mines become deeper, the pitch usually becomes flatter, and in these cases machines are gradually being introduced where practicable.

SOME NEW MINES WERE OPENED

A number of new operations were opened during the past year, and the coal produced from these mines will undoubtedly materially increase the state's output in the coming year. Among these may be noted a new shaft for the Degnan & McConnell Coal Co., at Wilburton, a shaft and a slope at Hartshorne and a shaft at Alderson for the Rock Island Coal Mining Co., two slopes at Adamson for the Union Coal Co., two slopes at Blanco, in addition to several small openings in various parts of the mining field. Most of these mines will be large ones with modern machinery and equipment.

At Midway, in Coal County, one of the mines has changed from the room-and-pillar to the longwall system of mining. If it should prove successful, it will undoubt-

edly be introduced into other mines to the benefit of the mining industry, since longwall allows a greater extraction of coal than any other system now in vogue.

The coal industry of the state has been hard driven to operate profitably during the past year. The settlement of labor difficulties in Colorado has again brought this coal into competition with Oklahoma fuel to such an extent that coal from that state competes successfully with the Oklahoma product as far east as Oklahoma City. In addition the price of oil was so low that many of the railroads installed oil burners in their engines, and the mines therefore lost a good portion of this business. Other industrial plants, as power houses, etc., changed from coal to oil as a fuel. Under these conditions there is little surprise at the considerable number of coal companies that have gone into the hands of receivers or have suffered reorganization.

The relations between employer and employee in the mining industry have been cordial, and there has been little or no time lost through strikes.

The Government rescue car and crew spent five months in the coal fields teaching first aid and the use of the oxygen breathing apparatus. This training was given to 400 miners at the different camps and also to about 50 of the miners' wives and daughters.

Better sanitary and safety precautions are gradually being introduced for the benefit of the miners, and recognition must be given for these improvements and for the general good condition of the mines to the able body of men composing the state inspection force—John O'Brien and Thomas Scott in district No. 1, Martin Clark and William T. Williams in district No. 2, and Frank Haley in district No. 3.

Oregon

BY HENRY M. PARKS*

Though the mining of coal in Oregon has never been considered one of the important industries of the state, nevertheless in the last six years alone 340,728 tons has been mined, having a total value of \$946,903. The statistics of the coal production for 1915 are not as yet available, but in 1914 there was 51,558 short tons mined with a value of \$143,556. This is a slight increase over the production in 1913, which was 46,063 short tons, valued at \$116,724.

All the coal mined in Oregon comes from the Coos Bay coal field, so named from the fact that it entirely surrounds that body of water. This field occupies a total area of about 230 sq.mi. The two largest producing mines are those operated by the Beaver Hill Coal Co. and the Coos Bay Coal and Fuel Co. In 1914 the average number of workmen at the Beaver Hill was 77 and at the Coos Bay Coal and Fuel Co.'s mine 62.

Other coal fields have been prospected in different parts of the state. Among them are the upper Nehalem field in Columbia County; the lower Nehalem in Clatsop and Tillamook Counties; the Yaquina field in Lincoln County; the Eckley and Shasta Costa fields in Curry County; the Eden field in Coos County; and the Rogue River Valley field in Jackson County. All these fields lie west of the Cascade range.

*Director, Oregon Bureau of Mines, Corvallis, Oregon.

Pennsylvania

BY FRANK HALL*

SYNOPSIS—The coal production of the state was about 232,000,000 tons, of which approximately 84,000,000 tons was anthracite and 148,000,000 tons was bituminous. About 18,000,000 tons of coke was produced, mostly in beehive ovens. There were 571 fatal accidents in the anthracite region and 428 in the bituminous field.

The total production of coal in Pennsylvania for the year 1915 will amount to about 232,000,000 net tons, according to the most careful estimates. Of this amount 84,000,000 tons will be anthracite and 148,000,000 tons bituminous. The amount of coal consumed about the mines in the anthracite region is estimated at 9,000,000 tons and in the bituminous region at 7,000,000 tons.

The number of employees in the anthracite region was 168,000 and in the bituminous region 180,000. Fatal accidents in the anthracite region numbered 571 and nonfatal accidents 957. In the bituminous districts there were 428 fatal and 1,257 nonfatal accidents. The coke production in the bituminous region amounted to 18,000,000 tons. No coke was produced in the anthracite region. The estimates of production in 1915 by districts are as follows:

ANTHRACITE			
District	Production, Tons	Employees	Coal Consumed at Mines, Tons
1st	1,022,626	2,207	121,374
2nd	4,005,926	8,733	384,162
3rd	3,729,104	7,860	263,126
4th	3,584,000	6,000	280,000
5th	3,198,245	6,940	280,738
6th	6,048,000	13,150	582,400
7th	6,139,840	11,500	612,640
8th	3,975,424	8,500	504,000
9th	5,990,000	10,019	493,844
10th	5,768,000	10,750	470,400
11th	6,720,000	11,862	750,521
12th	3,553,473	7,009	474,982
13th	3,035,110	6,879	350,879
14th	3,080,000	6,500	593,600
15th	2,594,700	6,717	385,814
16th	3,205,780	7,468	392,612
17th	5,271,280	9,234	552,720
18th	3,475,321	6,100	337,221
19th	3,584,000	7,700	537,600
20th	2,486,400	6,000	470,000
21st	3,184,365	6,896	310,831
Totals	83,616,484	168,019	9,149,467

BITUMINOUS			
District	Production, Tons	Employees	Coal Consumed at Mines, Tons
1st	3,683,574	5,000	75,236
2nd	6,800,000	6,900	220,000
3rd	3,000,000	5,500	170,000
4th	5,400,000	7,300	160,000
5th	5,800,000	6,900	185,000
6th	4,400,000	6,320	103,080
7th	4,000,000	5,450	109,000
8th	4,000,000	6,000	72,870
9th	6,000,000	7,450	3,500,000
10th	3,300,000	5,800	85,000
11th	7,739,191	6,075	309,567
12th	4,240,000	6,250	261,850
13th	4,000,000	5,150	45,000
14th	5,500,000	5,750	68,000
15th	5,000,000	6,500	120,000
16th	6,500,000	7,500	500,000
17th	4,261,394	7,220	63,598
18th	4,000,000	6,700	72,500
19th	6,630,000	6,400	185,000
20th	5,500,000	5,500	115,000
21st	6,560,340	5,860	175,369
22nd	4,750,000	5,000	70,000
23rd	5,700,000	6,600	140,000
24th	4,874,412	6,288	100,763
25th	4,500,000	6,500	150,000
26th	3,783,538	5,304	86,830
27th	4,151,700	5,308	93,000
28th	4,856,498	6,150	23,000
29th	4,002,505	4,617	103,605
30th	5,062,095	5,900	170,996
Totals	147,996,247	183,192	7,534,264

Operations in both regions were somewhat curtailed by the shortage of labor and car supply. The question of la-

*Deputy chief, Pennsylvania State Department of Mines, Harrisburg, Penn.

bor is a serious one at the present time, largely because the European War has made a great drain on the number of foreign miners. In both the anthracite and the bituminous regions the Slavs constitute a majority of the mine workers.

In the anthracite region there are at least 75,000 Slavs, or were at the beginning of the year, 12,000 Italians, 11,000 Irish, 10,000 Austro-Hungarians, 7,000 Welsh, 4,000 Germans, 6,000 English and 50,000 of other nationalities. In the bituminous region there were 58,000 Slavs, 29,000 Italians, 2,000 Irish, 23,000 Austro-Hungarians, 4,000 Germans, 5,000 English and 65,000 of other nationalities. Miners representing 30 different nationalities are employed in the coal mines of the state.

MANY MINERS AT THE FRONT

Anything that interferes with this foreign labor is keenly felt by the coal operators, and as most of the nations represented in the foregoing enumeration are at war, many of the miners have been called to the service. The effect of the exodus is decidedly detrimental to the mining industry.

Aside from the scarcity of labor caused by the unusual conditions existing at the present time, there is a gradual but steady diminution in the ranks of the first-class miners. The Welsh and English are growing fewer every day, and the French have become almost a negligible quantity. The Irish, once prominent, are giving way to the Slavs and seeking more congenial fields of labor.

If the second generation of foreign miners, as well as other American-born young men, could be induced to enter the mines, the labor conditions would be more stable and certainly more satisfactory from the point of intelligent service. But, notwithstanding the improvement in mining conditions, which comprehends increased pay and shorter hours as well as more hygienic and comfortable surroundings, the young American seems to prefer almost any other occupation to that of mining.

The coke trade, active and profitable at the close of the year, is still criticized for its wasteful methods of production. Valuable byproducts, such as tar, ammonia, gas and benzol, are to a great extent wasted owing to the use of the beehive oven. It is claimed that millions of dollars that might be saved annually by careful scientific methods, such as are in vogue in Germany, are lost to the operators in this country.

EXPLOSIONS AND DISASTERS

The year records three serious disasters, all due to explosions of gas, but nothing of an extraordinary character. One occurred at the Prospect Hill colliery of the Lehigh Valley Coal Co. on Feb. 17, by which 13 men were killed; one at the Orenda No. 2 mine of the Orenda Coal Co., Aug. 31, in which 19 men were killed; and one at the Smokeless No. 1 mine of the Smokeless Coal Co., May 24, which killed 9 men.

Two breakers in the anthracite region were destroyed by fire—one at Jeddo, Jan. 15, belonging to the G. B. Markle Co., and the other at Cranberry, May 25, belonging to Pardee Brothers & Co. The loss entailed in these fires amounted to several hundred thousand dollars.

One of the important events of the year was the declaring unconstitutional of the anthracite coal tax by the Supreme Court, an action that will result in the loss of \$5,000,000 taxes annually to the state.

An incident of much interest is the report made by the Lehigh Coal and Navigation Co. that the Summit Hill fire which has been burning for 62 years in the valuable anthracite coal measures has finally been conquered by the building of a concrete wall between the burning coal beds and the surrounding territory that has thus far escaped, although it has been in imminent danger for some time. To confirm the statement of the engineers that the fire has not extended beyond the retaining wall, bore holes have been sunk all over the adjoining virgin property.

Another incident that bears relation to the trade and is of more significance than may be imagined is the effort being made by many of the operators to curtail the habit of drinking that is unfortunately too prevalent among their employees. In the anthracite region the mine foremen, assistant mine foremen, firebosses and all other employees known as monthly pay men have been asked to refrain from entering saloons. A request has also been made to the municipal authorities in the various towns and boroughs where mining operations are carried on that the saloon keepers be asked to close the saloons from 11 p.m. to 7 a.m. If this request is complied with and the miners and others connected with the companies are prevented from obtaining drink after 11 o'clock, they will be able to obtain the average night's rest. Furthermore, if the saloons are not open until 7 a.m., they will be restrained from getting liquor before going to work. The result of this practical temperance effort will be watched with interest and may be fruitful of much good.

SAFETY MEASURES AND IMPROVEMENTS

A marked advance in safety measures and improvements in the living and social conditions in the mining communities was made during the year. The efforts put forth by many of the operators to give to their employees the greatest possible protection have led them in their zeal to exceed in some instances the provisions of the mining laws. It seems to be recognized as a fact that preventive measures, even if costly to install or adopt, are a good investment. Making all due allowance for the high humanitarian spirit and genuine brotherly regard that impel men to protect their employees, the practical wisdom of taking all possible precautions to avoid accidents is fully understood by the intelligent coal and coke operators of today.

The work of the State Department of Mines during the year has been especially signalized by the attention given to the work of mine inspection. The force of inspectors has been increased from 28 to 30 in the bituminous field and from 21 to 25 in the anthracite region. This force of 55 qualified, competent men is giving the most careful and constant attention to the mines in the various districts.

Pennsylvania can undoubtedly claim the largest and perhaps the most efficient mine-inspection force in the United States, and this fact engenders a feeling of assurance that mining will be conducted with the greatest degree of safety compatible with practical and reasonable operation.

From nearly all the districts in the bituminous field and from many in the anthracite region comes the information joyfully given that the prospects for 1916 are unusually bright. The war abroad, while disturbing the ordinary channels of business and depleting to some extent

the ranks of the miners, is at the same time having a most stimulating effect on the coal business, and while the permanency of this trade is uncertain, the present result is a boom in output and a marked advance in prices, a condition most pleasing and most unusual to the bituminous operators.

Bituminous coal at the close of the year shows an increase of more than 100 per cent. in price on prompt coal, with a heavy demand, and predictions of \$5 or \$6 a ton are confidently made. This price has actually been reached in certain sections of the country, owing to the car shortage and the embargo placed upon shipments to certain distributing points. The regrettable lack of facilities in the way of water transportation has made it necessary to stop the shipment of coal to many points in the East, with the result that the territory including New York and New England is suffering acutely.

Anthracite in 1915

By E. W. PARKER*

The anthracite trade in 1915 was, generally speaking, far from satisfactory to the producers. It was marked notably by an exceptional indisposition on the part of distributors and consumers to take advantage of the usual spring and summer discounts and lay in their supplies in advance of the cold weather. In spite of this unfavorable condition production at the mines was kept up for the most part almost to capacity, with the result that storage yards in the producing regions were filled to repletion. Exact information as to the quantity of coal, particularly of the prepared or domestic sizes, that was thus taken care of is not obtainable, but it is estimated that the anthracite actually marketed in 1915 was between 5,000,000 and 10,000,000 long tons less than in 1914. Based upon the records of shipments as reported to the Anthracite Bureau of Information at Wilkes-Barre, the production in 1915 showed a decrease compared with the preceding year of about 2,000,000 tons.

As a result of the lack of forehandedness on the part of buyers during the summer months, there was at the close of the year serious apprehension of a coal famine in the anthracite markets, a state of affairs considerably aggravated by a shortage in car supply and the congested condition of the railroads and the terminal facilities at tidewater, arising from an inadequate supply of ocean carriers for export and coastwise freight.

The total production for the year is estimated at 79,100,000 long tons, against 81,090,631 tons in 1914. The monthly shipments as reported to the Bureau of Anthracite Coal Statistics and (since September, 1915) to the Anthracite Bureau of Information for the two years were as follows, the shipments for December, 1915, being estimated:

	1914	1915
January	5,175,732	4,734,535
February	4,121,451	4,275,107
March	5,164,703	4,985,398
April	6,072,164	6,486,201
May	6,281,553	5,797,961
June	6,130,186	5,316,102
July	5,391,857	4,934,205
August	5,483,743	5,330,831
September	6,246,192	5,518,771
October	6,644,476	6,505,892
November	5,928,286	6,297,215
December	5,702,258	6,200,000
	68,342,601	66,382,218

*Director, Anthracite Bureau of Information, Wilkes-Barre, Penn.

In the latter part of 1914 the Pennsylvania Public Service Commission ordered a reduction of freight rates on anthracite of 40c. a ton from the coal regions to Philadelphia. This order, however, was appealed to the courts, and as no decision had been reached at the close of 1915, it did not affect the trade for the year. On July 30, 1915, the Interstate Commerce Commission, after an investigation into "the matter of rates, practices, rules and regulations governing the transportation of anthracite coal," handed down a decision ordering a general reduction, but in varying degrees, in the rates on the prepared and pea sizes of anthracite in interstate traffic.

One of the peculiar effects of this decision, however, was to advance the rates on buckwheat, rice and barley (the steam sizes), which were made to take the same rate as pea coal. The decision was at first made effective Oct. 1, but the time was later extended to Dec. 1 and still later to Jan. 1, 1916; so that it did not affect the trade for the year. In December it was further extended to Apr. 1, 1916. The third event was a decision by the Supreme Court of Pennsylvania declaring unconstitutional the act of the legislature passed in 1913 imposing a tax of 2½ per cent. on the value of the anthracite production. The state has asked for a reargument of the case, and until this matter had been decided, no disposition of the funds can be made.

Tennessee

By R. A. SHIFLETT*

The coal production of Tennessee for the year 1914 was 5,753,446 short tons. The estimated output for 1915 will be about 6,000,000 short tons, a slight increase. The small output is attributed to general business depression, the large number of factories that have changed from steam to electric power, the inability of our mines to secure large contracts for steam coal and also to the considerable number of mines recently opened up in southern and eastern Kentucky and in southwestern Virginia.

Only a few mines in this state have been able to handle or dispose of the steam coal produced. Some of them have been running about half the time on short orders, the average sale price for steam coal being about \$1.10 per ton.

The market for steam coal from this section was exceedingly dull and discouraging until the first of November. Since that time there has been an increased demand, but the car shortage is practically confining the production to the average obtained during the summer and fall months, although slightly increased prices are being realized.

The demand for domestic coal has been good, and could the operators have been able to dispose of the steam product at a break-even price, this would have been a fairly good year, instead of one of the most discouraging periods in the history of coal mining in this state. The outlook, however, at this time is encouraging, and while the operators are not particularly optimistic, they are preparing for a larger production for the year 1916, anticipating better business and better prices. The average price of the best domestic coals for this year was \$1.95 per ton.

*Chief mine inspector, Harriman, Tenn.

Taking into consideration the thinness of the seams mined in this state, it is evident that the operators must obtain better prices for steam and domestic coals and a greater demand in order to break even. The miner must also receive better wages and solid time to take care of his family.

The heavy advance in iron, copper, electrical supplies, mining machinery and in fact everything used in and around the mines makes it practically prohibitive to mine coal in this state at the prices obtained during the past year.

Utah

BY J. E. PETTIT*

The total coal production of Utah was below that of last year, 3,083,676 tons being produced during 1915—a decrease of 65,815 tons. The production of coke amounted to 357,572 tons—an increase of 8,766 tons over last year.

There were no labor troubles in this state during the past year, and the car situation was 64 per cent. normal. During August, September and October there were 4,044 men employed in the coal mining industry of Utah. There were 11 fatal, 28 serious and 155 nonserious accidents.

New producing mines were opened during the year. The average number of working days was 202. The selling price was the same as last year, but the prospects look brighter for the coming twelve months.

There were also 29,044 tons of gilsonite mined in this state during 1915, which is an increase of 11,564 tons over the preceding year.

Washington

BY JAMES BAGLEY†

The production of coal in 1915 fell far short of that in the previous year. This was due principally to the cheapness of fuel oil, which has been substituted for coal, replacing it on the railroads and steamers engaged in local and coastwise traffic. According to the reports received and an estimate for December, the output for the year will be about 2,300,000 short tons, a decrease of over 740,000 tons as compared with 1914.

The past year has been one of the dullest that the coal business in the state has experienced. The outlook for 1916 is better, but it is not expected that there will be any great improvement until the railroads find it more economical to use coal than fuel oil.

The production of coke in 1915 showed an increase over that in the previous year and will be about 87,000 short tons as compared with 78,573 short tons during 1914. All the coke produced in the state comes from Pierce County. The production has been steadily increasing during the past few years and from present indications will assume still larger proportions. Most of the output is consumed by smelting companies in the Pacific Northwest.

No labor troubles occurred during the year, as the operators and miners are on very friendly terms and

have experienced no difficulty in settling any differences that arose during the season.

Forty-five fatal accidents had occurred up to December 20, against 17 for the previous year. Thirty-one men were killed by an explosion which occurred at the Ravensdale Mine, Ravensdale, Wash., on Nov. 16. The initial cause of this explosion was not determined, but it was unquestionably propagated by means of coal dust. The workmen in the mines throughout the state come under the Workmen's Compensation Act, which provides for all employees injured or killed while engaged in the mines.

West Virginia

BY EARL A. HENRY*

The data taken from the records of the Department of Mines of West Virginia for the year ending June 30, 1915, show a total production of 64,118,677 long tons, or 71,812,918 net tons, a decrease from the 1914 figures of 1,664,411 long tons. This decrease was due to the general depression of the coal business during the first six months of the fiscal year. During the last six months the demand for West Virginia fuel increased, especially for the soft coal of the Pocahontas and New River fields, to the extent that the Pocahontas field had the largest production of any period in its history.

The accompanying table shows the statistics of coal and coke production, as well as those of the fatal accidents and the nationalities of the employees.

COMPARATIVE STATEMENT OF COAL PRODUCTION FOR FISCAL YEARS 1915 AND 1914, TONS OF 2,240 LB.

County	Coal Production for 1915	1914	Increase Over 1914	Decrease Under 1914
Barbour.....	962,228	1,098,495		136,267
Boone.....	575,835	472,933	102,842	
Braxton.....	294,206	265,101	29,105	
Brooke.....	727,326	564,337	162,989	
Clay.....	531,645	396,411	135,234	
Payette.....	7,881,872	8,686,988		805,116
Gilmer.....	137,971	88,369	49,602	
Grant.....	165,121	189,746		24,625
Greenbrier.....	24,128	22,633	1,495	
Harrison.....	4,533,032	5,097,644		564,612
Kanawha.....	5,142,586	5,108,783	33,803	
Lewis.....	300	28,956		28,656
Lincoln.....	41,966	61,588		19,622
Logan.....	6,307,286	5,333,943	973,343	
Marion.....	5,988,879	5,830,070	158,809	
Marshall.....	963,173	929,425	33,748	
Mason.....	125,135	123,630	1,505	
McDowell.....	13,007,674	14,055,157		1,047,483
Mercer.....	2,717,510	2,850,499		132,989
Mineral.....	556,350	688,172		156,970
Mingo.....	2,538,174	2,510,568	27,606	
Monongalia.....	319,947	400,046		80,099
Nicholas.....	122,264	96,440	25,824	
Ohio.....	540,333	482,844	57,489	
Preston.....	980,322	1,281,181		300,859
Putnam.....	479,045	554,923		75,878
Raleigh.....	4,957,567	5,066,221		108,654
Randolph.....	550,108	737,718		187,610
Taylor.....	946,814	1,068,772		121,958
Tucker.....	1,453,752	1,199,113	254,639	
Upshur.....	98,504	97,473	1,031	
Wayne.....	51,458	55,060		3,602
Wyoming.....	96,166	39,789	56,377	
Totals.....	63,818,677	65,483,088	2,105,441	3,795,000
Small country mines	300,000	300,000		
Grand totals.	64,118,677	65,783,088	2,105,441	3,795,000
Total tonnage of coal produced, gross tons.....				64,118,677
Total tonnage of coal produced, net tons.....				71,812,918
Decrease, gross tons.....				1,664,411
Total tonnage of coke produced, net tons.....				1,103,004
Decrease, net tons.....				854,397
Total tonnage of coal per fatal accident, gross tons.....				140,920
Number of fatal accidents, inside.....				455
Number of fatal accidents, outside.....				31
Decrease in fatal accidents.....				86
Number of Americans employed.....				49,963
Number of foreigners employed.....				31,365
Total number of employees.....				81,328

While development has not been as pronounced as that of the previous year, there have been several new opera-

*Chief of Department of Mines, Charleston, W. Va.

*Chief mine inspector, Salt Lake City, Utah.

†State Inspector of Coal Mines, 503 Alaska Building, Seattle, Wash.

tions started throughout the state, especially in Raleigh, Logan and Boone Counties. It is worthy of note that no labor troubles occurred during the year, and had it not been for the depression in the coal business, there would have been a large increase over previous years. There is sufficient development to produce a hundred million net tons of coal were the railroads provided with the proper facilities to handle this large tonnage. As 90% of the coal produced in the state passes beyond its boundaries, the prosperity of the coal industry depends entirely upon the transportation facilities of the different railroads.

A large number of coal companies throughout the state have been at great expense improving the sanitary and safety conditions of their mines, and it is the general opinion of the operators that the increased freight rates advocated by some of the railroads would seriously injure the coal business to the extent that there would be a large decrease in the production. Such an increase in rates would no doubt put many mines out of business.

✱

Northern West Virginia

By H. A. WILLIAMSON

The operators of this region entered on the year 1915 with more or less of the proverbial fear and trembling, but after the passing of the first few months, confidence gradually returned; and when actual figures are available, June will probably show the largest monthly tonnage ever shipped from this section.

However, during all the year there has been a shortage of cars, and since midsummer this shortage has become more and more severe, until at the end of the year it is acute. But for this unfortunate feature it is more than probable that 1915 would have been the banner year of the region in every respect. As it is, the tonnage shipped will be slightly in excess of that sent out last year, or something over 15,500,000 tons.

During the year many foreigners left to join their colors, but other supplies of labor have come in, and there have always been miners sufficient to load all available cars. The usual absence of friction between labor and operators has marked the year, and the whole district is proud of its contented workmen.

PRICES HAVE HELD STRONG

Prices of all grades of coal have held strong through the year, and the production of coke, while not large, is considerably better than last year. Slack coal, although still selling at a price the operators consider below normal, has advanced sharply above the price of 1914. Again, owing to the car shortage, the demand for both coal and coke has continually exceeded the supply.

The Lake trade opened with probably the heaviest stock of coal on hand at the Upper Lake docks that has ever been known. This feature retarded early Lake shipments, but beginning in May, shipments became heavier, and June saw a record business. The trade then slumped and varied largely until toward the end of the season, when there was the usual sharp increase, partly owing to relief of the storage docks by the removal of fuel for harvest trade and partly to the usual rush at the end of the season to get in a few more cargoes. On the whole the business was better, and an appreciably larger tonnage was shipped than during 1914.

To a certain extent European and South American business has helped the region's coal trade, but here too the car shortage has injured matters; and this, together with the extreme difficulty in securing vessels and the uncertainty as to what was going to happen to those vessels after they were secured, has left much to be desired in the foreign trade. Some foreign business, however, has been secured, and it is hoped that this will result in larger benefit to West Virginia in future years.

NEW OPERATIONS

During the year several new operations have appeared. The Consolidation Coal Co. is rapidly completing the installation of two new shaft mines, which when finished promise to be most up-to-date and among the finest coal-producing plants in the state. It is also understood that it contemplates and has prepared plans for three other mines in this district.

The failure of J. V. Thompson, while it has caused considerable comment, has had apparently no effect in the region, except in a few individual cases. On the other hand, great interest has been attached to the various freight-rate matters now before the Interstate Commerce Commission, and the outcome is being largely commented on. New rates have been filed to become effective Jan. 20, 1916, but the matter of suspension of these rates is now before the commission, and it is not at all conceded that they will go into effect.

During the year the property of the New Central Coal Co., consisting of about 1,400 acres of coal and an excellent shaft-mining installation capable of producing 1,500 tons per day, was purchased by a new organization to be known as the Stafford Coal Co., and it is understood the operations are to be pushed vigorously.

The opening of the Monongahela Ry., giving a new connection with Pittsburgh and making an outlet both to the Pennsylvania Lines and the New York Central, has been one of the events of the year. While the connection does not at present add greatly to the coal tonnage of the region, it taps a coal area previously largely untouched, and great things are expected of it in the future. The entrance of the Western Maryland R.R. has also caused comment. Just what this means is at present not known, but the fact is noted that it is building connections to the two new mines of the Consolidation Coal Co., and it is rumored that it has additional projects.

✱

Southern West Virginia

By JOSIAH KEELEY*

SYNOPSIS—A review of the New River and Kanawha fields and a humorous reference to the Norfolk & Western Ry. field. Progress is made in the purchase of power, installation of machines, conservation of coal and improved preparation.

For those interested in the development of the coal industry in southern West Virginia for the year 1915 I submit a few figures which, though not exhaustive, are fairly accurate. Usually, when southern West Virginia is mentioned, we are at a loss to know just what is to be included, so I have tried to make the figures convey accurate information on the district covered.

*General manager, Cabin Creek Consolidated Coal Co., Kayford, W. Va.

At the beginning of 1915 the New River district on the Chesapeake & Ohio Ry. was operating 70 mines on allotment and 35 on development; Kanawha 98 on allotment and 13 on development; Guyan Valley 48 on allotment and 6 on development. At this writing, Dec. 22, the Chesapeake & Ohio reports 86 of the New River mines on allotment and 22 on development; Kanawha 85 on allotment and 11 on development; Guyan Valley 62 on allotment and 7 on development.

These figures, together with the tonnage table, will tell a fairly accurate story of the industry. The tonnages in the table are based on 2,000 lb. to the ton.

	New River	Kanawha	Kanawha	Guyan Valley
January	509,670	1,139,360	.....	.....
February	425,240	946,630	.....	.....
March	478,300	955,505	.....	.....
April	515,535	1,012,230	.....	.....
May	587,250	1,131,250	.....	.....
June	614,995	1,126,935	.....	.....
July	743,395	1,143,055	546,665	596,390
August	763,970	1,339,840	649,475	690,365
September	748,385	1,350,770	657,230	693,540
October	680,775	1,291,315	660,055	625,260
November	711,660	1,359,370	684,500	672,870
Dec. 22	425,830	950,920	470,970	479,950
Total	7,205,005	13,747,270		

In July the Kanawha division was subdivided into an area of the same name and the Guyan Valley division, the total Kanawha tonnage showing in the second column.

To show how difficult it is to tabulate tonnage figures on a few days' notice, it may be well to state further that there are some Kanawha mines on the Kanawha & Michigan Ry. which are not included in the table. Moreover, the tonnage given is expressed in car capacity, but the figures obtained are accurate within a small percentage.

Roughly dividing the year, the first half has been a period of plenty of cars and no orders, while the last half has brought a scarcity of cars, which in turn has helped stimulate the market. Only as the new year comes in do we see a faint glimmer of encouragement in prices.

NORFOLK & WESTERN MINES CHARACTERIZED

It would be expecting too much of any one operator to generalize on details of the industry extending over even so small a territory as the southern portion of his own state. For instance, "over on the Norfolk & Western" is a vague way of referring to one of the richest coal fields in the world, but all we men in Kanawha know about it is that it is a "land of giants" and "the Anakim are there." Nothing mentioned in this review should be construed as referring to that part of West Virginia along the Norfolk & Western Ry. When we have a car shortage and any reference is made to that section, someone usually sums up the virtue of that road by saying, "Gentlemen, the Norfolk & Western is a coal-hauling trick."

Some of our union men went over a short time ago to "spy out the land," and upon their return reported "a land of natural-born scabs, hopelessly blinded to their bondage." Another report current in the Kanawha district is that the coal is all loaded by the car and that the railroad cars and mine cars were used interchangeably until they could not get the mine cars through the railroad tunnels. Still another report is that they run their mine motors right to tidewater without dumping the coal at all. As this is about the nearest we have to accurate information on that part of southern West Virginia, we will expurgate it from our review and stick to the region on which our tonnage table is compiled.

As to new methods being introduced in southern West Virginia, the past year has not brought any notable

changes. There is a tendency toward shortwall machines, and mechanical haulage has a few more advocates, though there has not been enough money made to encourage improvements. The installation of the immense central power plant by the Virginian Power Co. at the mouth of Cabin Creek has made a great improvement in power along the Kanawha and up the various creeks for miles, east and west. The coal companies are rapidly dismantling their old plants.

KANAWHA AND NEW RIVER PROGRESSING SLOWLY

Conservation of the coal is probably receiving more attention than formerly, as shown by the tendency to develop with reference to pillar work, whereas for many years there was little thought of recovery in many mines of southern West Virginia. You have only to look at recent mine maps to see the improvement. Where the splint coals are loaded, the installation of shaker screens is becoming more and more the rule. Even the expensive Marcus equipment is not uncommon.

Roller-bearing mine-car wheels are still well thought of, and a few steel cars have been purchased, although wooden rails, wooden ties and open-hub wheels are the rule, and with steel at its present price we are most of us content to use wood.

Two serious explosions occurred this year, one at Layland and the other at Boomer, in early spring and late fall respectively. The latter is the second time on record of an explosion in what is known as the Eagle seam. The No. 2 gas seam and the various splints of southern West Virginia have never had an explosion from gas or dust.

This section of West Virginia has in times past received some unfavorable mention for neglecting the refinements of coal mining, such as first-aid teams, playgrounds, up-lift work, etc., but some of the newer camps are spending much money on these developments, and all of us are talking about them. The mine-extension work of West Virginia University must not be overlooked in this connection. Three good men are in the field, and the most of their time is spent in southern West Virginia. These men are giving practical demonstrations of mine gases and explosions and showing moving pictures of plants and methods in the more fortunate parts of the country.

Most operators still believe that prohibition laws affect their business favorably, and the booze problem, while not settled, has been greatly simplified. Christmas at the coal camps has been marked by more Christmas trees and fewer Christmas sprees than for any season in ten years past.

❧

Coal Production of District No. 2, Wyoming

BY GEORGE M. AIKEN*

The fiscal year ending Sept. 30, 1915, has not been one of business prosperity for the coal industry of Inspection District No. 2, which comprises the northern part of Wyoming.

There are 10 large companies operating in this district, whose production for the year was 1,808,820 tons of coal, or a decrease of 275,108 tons under the previous year.

The greatest decrease occurred in the Sheridan coal field of Sheridan County, the coal being a high-grade lignite used mostly for commercial purposes. The un-

*Inspector, District No. 2, 216 West 7th St., Sheridan, Wyo.

precedented warm weather during the fall and winter months was the chief cause.

The Cambria Fuel Co., operating mines in Weston County in a bituminous bed of coal that is used almost entirely by the Burlington R.R. for steam purposes, fell short 50,269 tons of its 1914 production.

COAL PRODUCTION IN WYOMING NO. 2 DISTRICT BY YEARS AND MEN KILLED AND INJURED

Year	Tons	Men Employed	Killed per 1,000	Injured per 1,000	Killed	Tons Produced per Man	Injured	Employed
1909	1,425,748.00	2,286	2.180	3.937	285,149.000	158,414.00	523.78	
1910	1,953,919.00	2,935	3.757	7.880	217,102.000	108,551.00	815.83	
1911	1,744,593.64	1,771	2.820	12.980	348,918.728	75,851.89	985.08	
1912	1,840,887.58	2,482	1.610	11.280	460,222.145	65,746.00	742.00	
1913	1,865,885.05	2,114	2.365	7.568	343,167.000	116,614.69	882.60	
1914	2,083,928.92	2,394	3.340	9.600	231,547.650	90,605.60	870.48	
1915	1,808,820.85	2,016	1.430	18.200	602,940.280	48,887.05	897.23	

The Big Horn Collieries Co., operating mines in Hot Springs County, the coal being of a semibituminous nature and a splendid steam fuel, produced 64,897 tons over the previous year, possibly due to better railroad accommodations such as follow an increase in population.

There were employed in the industry 2,016 men for an average of 163 working days in the year for each mine, which means that some of the mines worked less than one-third time. There were no labor troubles, and labor was plentiful.

As for accidents, it was a remarkable year. The safety-first campaign brings results. There were 3 fatal and 37 non-fatal accidents reported, the compensation law making it possible to obtain a complete record of all accidents.

It is safe to say that the coal mines are under the management and supervision of as competent mining men as there are in the mining industry. The most up-to-date machinery and safety appliances are in use, and every precaution is taken to protect life and property.

PRODUCTION, MEN EMPLOYED AND DAYS WORKED FOR YEAR ENDING SEPT. 30, 1915

Sheridan County:	Tonnage	Men Employed	Days Worked
Wyoming Coal Mining Co.	272,884.55	275	149
Sheridan Coal Co.	147,588.00	217	100
Carney Coal Co.	236,526.00	188	156
Kooli Mine	182,723.00	200	125
Acme Coal Co.	165,886.00	200	188
Totals	1,005,607.55	1,080	718
Weston County:			
Cambria Fuel Co.	325,012.30	435	171
Hot Springs County:			
Owl Creek Coal Co.	160,082.00	157	175
Big Horn Collieries Co.	158,318.00	198	187½
Totals	318,400.00	355	362½
Fremont County:			
Poposia Coal Co.	147,801.00	130	173
Converse County:			
Fairview Coal Co.	12,000.00	16	208
Grand totals	1,808,820.85	2,016	1,632½

Coal in District No. 1, Wyoming

BY GEORGE BLACKER*

SYNOPSIS—District No. 1 produced less coal in 1915 than during the preceding 12 months. There were also fewer accidents. Many of the accidents that occurred, however, in all probability might have been prevented if adequate supervision were given at the working face.

The annual coal production of District No. 1, Wyoming, shows a decrease for the fiscal year ending Sept. 30, 1915, from the production of the preceding 12 months. There seems to have been a general depression in all wage-labor industries, and coal mining was no exception.

*State inspector, District No. 1, Cumberland, Wyo.

There was also a decrease in the fatal accidents during the past year, there being 18 reported against 43 during 1914. The Superior Coal Co. mined about 1,250,000 tons of coal without a fatal accident. I do not believe that this splendid record is a mere coincidence or piece of luck, but one of the good results from close supervision over

the working faces and from the efforts of the management in charge to maintain strict discipline in and around the mines.

Discipline should always be rigidly maintained. Workmen must understand the rules and regulations and be made to obey them, every infraction should be severely punished. No man ought to be permitted to endanger his own life or the lives of those associated with him.

Our mining law makes it the duty of the mine foreman or his assistant to visit every working place each alternate day. In my opinion this is not often enough for the working faces to be inspected. I believe our mine foremen are visiting the working faces as often as it is possible for them to do regardless of the law, but with so many other duties to perform it is impossible for them to do justice to the inspection of the working faces.

It therefore becomes necessary that the work of inspecting the faces be intrusted to other competent men, whose duty it should be to see that every such place be made safe before the workmen are allowed to load or mine coal. Every practical miner knows that it is his duty to examine his working face at the beginning of each shift to see that it is in a safe condition. But the time of day when many of our accidents occur goes to prove that the men do not always examine their places before commencing work.

ROOF INSPECTORS ARE EMPLOYED IN SOME MINES

In some mines there are employed roof inspectors, whose duty is to visit the working places and see that all are kept in a safe condition. If while visiting any working place such an inspector finds something that is dangerous, he calls the attention of the men to it, warning them of their danger and showing them what is necessary to be done to make their places safe. If he thinks they will not obey his instructions, he threatens to stop their cars. He then continues on his rounds of inspection.

In some cases the threat of stopping the cars has had the desired effect, but in many instances the foreman's instructions and threats are entirely ignored, and when he again makes his inspection, which might be the following day, he finds the same dangerous conditions.

I have often asked these foremen the reason why they did not see that the places inspected were made safe before they left them. The answer has in many cases been about as follows: My district is so large that if I saw to it that those things were done, I could not visit all the places in my district in the allotted time. Such inspections are a farce. No roof inspector after finding a place unsafe should continue on his rounds until he himself or some other person in authority has made sure that the place has been rendered safe. Closer inspections

of the working faces mean a reduction of fatal and non-fatal accidents, fewer widows and orphans and fewer cripples.

Most of the fatal accidents in District No. 1 are due to falls of roof. Out of a total of 22 fatal accidents occurring in 1911, 14 were due to this cause alone. Out of 35 fatal accidents in 1912, 18 were due to falls of roof and 6 to falls of coal other than roof coal. Of 21 fatal accidents in 1913, 9 were attributable to falls of roof and 2 to falls of coal. Out of the 43 fatal accidents of 1914, 18 were caused by falls of roof and 7 by falls of coal other than roof coal. Of 18 fatal accidents in 1915, 8 were due to falls of roof and 3 to falls of coal.

It is believed that most of these accidents were preventable and that they might have been avoided if the working faces had been inspected with sufficient frequency during working hours by competent roof inspectors. The majority of men employed in the mines in this district are foreigners. Many of them have come directly from their own countries and are not familiar with our language. It is impossible, therefore, to make them understand the dangers that they may encounter in their work, their ignorance often bringing them injury or death.

WHY ARE THE MINES DANGEROUS?

Many times the question is asked, Why are there so many accidents in our coal mines? This is easily understood when we stop to consider that in some of our mines we have miles of underground workings, with from 200 to 250 men employed. Many of these men are ignorant of the methods employed for their protection. They are left alone with only the partly understood instructions given them by the mine foreman.

We are told, and it cannot be disputed, that coal mining is one of the most hazardous occupations, and yet I believe it has less supervision for the number of men employed than any other calling. For every 30 men employed at the face there should be one roof inspector. These inspectors should be under the direction of the mine foreman and should have power to order out of a working place any man engaged therein who refuses to set props or carry out any other order issued for the purpose of preventing an accident.

These roof inspectors could fire all shots in their districts. They could inspect all holes and ascertain the amount of powder that was used. They could assure themselves that all holes were tamped to the mouth before firing and that no shots would be fired that in their judgment were unsafe. This would be putting the shot-firing into the hands of practical men.

In my opinion there would be no additional expense, because the extra supervision would mean a greater output, a saving of timber, less delay in repairing track, less waste of coal and safe working places. This last is the noblest of all conservations—the conservation of human life.

The workmen's compensation act must be taken into consideration by those who claim there would be a great additional expense. For every man killed the operator pays from \$1,800 to \$2,000. In addition there is the loss of the output on the day the man is killed and on the day of his burial, which is considerable. If by careful supervision of the working faces the fatal accidents could be reduced one-half, the operators would save an amount that would go a long way toward paying for the extra supervision of these places by the roof inspectors.

TONNAGE BY COUNTIES PRODUCED IN DISTRICT NO. 1

IN 1915	
Lincoln County	
Diamond Coal and Coke Co., No. 1 mine, Diamondville	154,702
No. 2 mine, Oakley	181,591
No. 4 mine, Glencoe	51,221
Dundee Coal Co., No. 00 mine, Diamondville	387,514
Kemmerer Coal Co., No. 3 mine, Frontier	20,000
No. 4 mine, Frontier	181,981
No. 5 mine, Sublet	15,309
No. 6 mine, Sublet	206,779
J. A. Quealy Coal Co., No. 1 mine, Elko	21,262
Union Pacific Coal Co., No. 1 mine, Cumberland	425,331
No. 2 mine, Cumberland	20,478
United States Coal Co., No. 1 mine, Conroy	419,568
Lincoln Coal Co., No. 1 mine, Frontier	40,000
Small mines	8,000
Total for Lincoln County	10,000
Uinta County	
Bear River Coal Co., No. 1 mine, Evanston	1,330,891
Sweetwater County	
Superior Coal Co., A mine, Superior	44,910
B mine, Superior	271,881
C mine, Superior	35,960
D mine, Superior	254,538
E mine, Superior	47,805
Union Pacific Coal Co., No. 4 mine, Rock Springs	239,327
No. 7 mine, Rock Springs	849,511
No. 8 mine, Rock Springs	18,270
No. 10 mine, Rock Springs	240,437
No. 1 mine, Reliance	269,268
No. 4 mine, Reliance	220,470
Gunn Quealy Coal Co., B mine, Gunn	748,445
Lion Coal Co., No. 3 mine, Lion	389,038
Wyoming Coal Co., No. 1 mine, Blairtown	35,563
Central Coal and Coke Co., No. 1 mine, Sweetwater	424,601
No. 2 mine, Rock Springs	95,866
Total for Sweetwater County	101,713
Carbon County	
Union Pacific Coal Co., No. 2 mine, Hanna	75,196
No. 3 mine, Hanna	202,646
No. 4 mine, Hanna	2,497,958
Total for Carbon County	209,119

SUMMARY OF FATAL ACCIDENTS

	1911	1912	1913	1914	1915
Number of men killed	22	35	21	43	18
Number of men injured	97	120	65	100	107
Number of wives made widows	11	18	6	18	10
Number of children made fatherless	29	41	9	52	37

CAUSES OF FATAL ACCIDENTS

	1911	1912	1913	1914	1915
Gas explosion	1	..	..	..	..
Dust explosion .....	..	7	..	..	..
Falls of roof (coal, rock, etc.)	14	18	9	18	7
Falls of coal other than roof coal .....	..	6	2	7	4
Mine cars and haulage motors	3	3	7	10	1
Explosives	3	..	..	3	1
Electrocuted .....	..	..	2	2	..
Miscellaneous	1	1	1	3	5

PRODUCTION OF COAL AND MEN EMPLOYED

County	Tons Produced	Men Employed
Lincoln	1,330,891	1,795
Uinta	44,910	51
Carbon	586,410	605
Sweetwater	2,497,958	2,912
Total	4,460,169	5,363

SUMMARY OF COAL PRODUCTION

	1911	1912	1913	1914	1915
Total number of tons of coal produced	4,865,761	5,500,253	5,229,817	5,137,843	4,460,169
Number of employees in and about mines	5,446	5,672	5,670	6,069	5,363
Number of fatal accidents	22	35	21	43	18
Tons of coal for each life lost	221,170	157,150	249,038	123,670	247,787
Number of employees for each life lost	248	162	270	141	298
Number killed per thousand employed	4.1	6.1	3.7	7.7	3.3

SUMMARY OF THE ITEMS

Number of counties producing coal	4
Number of shipping mines	34
Number of local mines	5
Number of miners	3,292
Others underground, men	1,377
Boys underground	40
Boys aboveground	27
Others aboveground	627
Total number of employees	5,363
Total tons of coal produced	4,460,169
Days of active operation, all mines	174
Kegs of powder used for blasting coal	49,337

Production of Other States

Arizona—There have been no coal operations in this state for the past 15 years. There are said to be two quite extensive coal beds in the Indian Reservation, but these have never been operated.

Georgia—The coal production of this state for 1915 was about the same as last year—255,626 tons.

Idaho—This state produced but 1,500 tons during the year, as compared with 2,000 tons in 1914. The formations of Idaho are mostly crystalline mineral-bearing rock and have always been too hot for the accumulation of coal.

Nevada—No coal mines were in operation in this state during the past year.

❧

Coal Mining in Alaska, 1915*

By SUMNER S. SMITH†

The review of coal mining in Alaska for 1915 presents little in the actual production or shipping of coal, but offers a hope that the next few years will see the territory listed among the producers and growing normally in this direction.

Under the Coal Leasing Act approved in October, 1914, there have been let some 25 or 30 leases granting permission to mine the coal from 10-acre areas for local consumption, without the payment of royalties. On none of these has mining been started on any large scale, and in the majority preparations to start next summer are all that can be credited to them.

A few patents were granted in the Bering River field, and the owners of the claims have announced that mining would shortly be started.

From the Whorf property near Seldovia on Cook Inlet a small tonnage was produced, part of which was used by the canneries locally and a part barged to the neighboring towns, some of it going as far as Seward. Probably the total output for the season did not exceed 2,000 tons. At Wainwright the natives mined a small amount of coal for the Government school at that point.

Neither of the properties which have in the past produced a small amount in the Candle Creek district north of Nome was worked during the past winter.

The most important features in the coal situation were the extension of the public-land surveys to the Bering River, Nenana and Matanuska coal fields and the start made on the Government railroad toward the last-named locality.

The areas that were covered by the public-land surveys as provided for in the Coal Leasing Act embraced approximately 360,000 acres in the three fields, of which some 60,000 acres was in the Bering River field and the rest fairly evenly divided between the other two. The land in the Bering River and Matanuska fields has been subdivided into leasing units by the Federal Bureau of Mines, and it is anticipated that these fields will be opened to prospective lessees at an early date.

Some 12 or 15 mi. have been completed on the Government railroad from Anchorage toward the Matanuska coal fields, and over 30 mi. of grade finished, on which rails will probably be laid this winter. From this point on the railroad construction to the coal fields is comparatively

easy, and it is the plan of the railroad commission to complete the 30 or 40 mi. to the coalfield at as early a date as possible.

Mr. Baxter, of the Copper River & North Western Ry., has been quoted as saying that his company would build a spur of 30 or 40 mi. from Katalla Junction to tap the Bering River field as soon as the Government leased the land. There has been considerable grading on the Katalla end of this branch, and 8 or 10 mi. of track laid.

❧

Coal Industry in Nova Scotia

SYNOPSIS—A review of the fiscal year ending Sept. 30, 1915. The coal production declined about 500,000 long tons.

The coal production for the fiscal year ended Sept. 30 exceeded 6,000,000 long tons, about half a million tons less than the previous year's production. The shortage in output was due to the scarcity of men and to high freight rates on sea-borne traffic, many of the miners having enlisted for the war and the steamships being required for the increased freightage in war materials.

The coal sales were about 300,000 tons less than in the previous year, although the demand was strong throughout the year just closed. About as many accidents occurred as in the previous year, and most of these were caused by falls of roof and coal.

There were no mines opened during the year. The Cape Breton Coal, Iron and Railway Co.'s mine at Broughton, which was reopened in 1913, was closed last January. The Inverness mine and railway passed into the hands of a receiver, J. McGillivray, who was the general manager. The mine is in operation with a decreased production for the year of about 40,000 tons. The Nova Scotia Steel and Coal Co. has been making shells most of the year, as well as manufacturing iron and steel. Its coal production fell off 218,000 tons.

The Dominion Coal Co., the leading coal producer in the province, mined about 4,320,000 long tons. Its New Waterford coal field, opened a few years ago, is becoming a large producer and is supplying some of the shortage caused by the closing of old and worked-out mines in the Glace Bay district. The Bridgeport Mine was idle, and Dominion No. 3 was closed during the year. The Reserve Mine, from which millions of tons of coal have been taken, will probably be worked out within a year.

There was a reduction in the output of the Pictou district, owing to the closing of the Allan mine in January last. This suspension of activity was the result of an explosion late in December, the after-damp of which caused the death of Thomas Blackwood, deputy inspector of mines for the district, and James Brown, manager of the mine. The Allan mine has produced since the explosion only 7,998 tons.

The Acadia Coal Co., which a few years ago had four mines in operation, is now depending almost entirely on the Albion mine for production. This mine produced last year 283,275 tons out of a total production of 324,480 tons, 41,105 tons being taken from the Allan mine.

There was no legislation affecting the mining industry. At present the mines are working to their full capacity, with a good demand for coal, but the output is somewhat hampered by the scarcity of men.

*Printed by permission of the Director of the United States Bureau of Mines.

†United States Mine Inspector for Alaska, Juneau, Alaska.

Coal in British Columbia, 1915

By E. JACOBS*

The gross production of coal in British Columbia in 1915, including the coal made into coke, was approximately 2,308,000 short tons. It being the official custom of the province, however, to record production in tons of 2,240 lb., it will be more convenient to make comparisons in that measure. The quantity given is subject to revision when the final returns come in, an estimate having been made of the December production in arriving at the total here used as representing the production of 1915. The following table affords opportunity for making comparisons in gross output between the several years:

	Tons of 2,240 Lb.
1915.....	2,060,804
1914.....	2,166,428
1913.....	2,570,760
1912.....	3,025,709
1911.....	2,297,718
1910.....	3,139,235

The year 1910 was the record year of the coal production of British Columbia. Since then conditions have been in one way or another unfavorable. For eight months of 1911 the Crowsnest district collieries were closed, owing to non-agreement between the operators and the mine workers relative to wages, etc., and the result, so far as production was concerned, was a decrease of 941,000 tons as compared with the 1910 output of that district. For several months of 1912 there was labor trouble at the mines of the Canadian Collieries, Ltd. (Dunsmuir), with a resultant decrease in output of coal. In the spring of 1913 the United Mine Workers of America determined to force an issue and so called a strike at all the coal mines on Vancouver Island. Thus there was a decrease of 616,000 tons in that year's production in the Coast district as compared with that of 1911, when there was not any similar obstacle in the way of production. The official Annual Report of the Minister of Mines, says that the further decreased coal output in 1914 was undoubtedly entirely attributable to the war.

As to 1915, the greatest loss in production was in the Crowsnest district, caused chiefly by the Hosmer mines having been closed and by a lessened output from the Corbin colliery, these together showing a decrease of 123,825 tons, against which there was an increase of 18,607 tons from the Crow's Nest Pass Coal Co.'s mines, leaving a net decrease of 105,218 tons. This company now has some of its mines in such good condition that it could have produced fully twice as much coal as it did. There was a generally reduced output from the relatively small mines of Nicola and Similkameen districts.

The production of several of the Vancouver Island mines was smaller than in 1914, the Vancouver-Nanaimo Co.'s output having been 61,000 tons less, that of the Canadian Collieries company's Comox mines 34,000 tons and that of the Pacific Coast Coal Mines, Ltd., South Wellington mine (which was flooded for several months) nearly 26,000 tons less. Against these decreases there was an increase of nearly 101,000 tons from the Western Fuel Co.'s mines, of which 28,000 tons was from its new Reserve shaft mine, 35,000 tons from the Extension Colliery mines of the Canadian Collieries, Ltd., and 22,500 from the new Morden mine of the Pacific Coast Coal

Mines, Ltd. The net result was an increase of about 37,500 tons, as compared with the output of 1914.

PRODUCTION OF COAL IN 1915

Vancouver Island	
Canadian Collieries, Ltd. (Dunsmuir):	
Comox mines (Cumberland).....	2,240 Lb.
Extension mines	360,410
	164,365
	524,775
Western Fuel Co.:	
Nanaimo mines.....	382,604
Reserve Shaft mine.....	28,866
	411,470
Pacific Coast Coal Mines, Ltd.:	
South Wellington	105,000
Morden Shaft mine.....	22,500
	127,500
Vancouver-Nanaimo Coal Mining Co.....	
	46,034
Nicola	
Middlesboro Collieries	54,500
Inland Coal and Coke Co.....	32,820
Pacific Coast Colliery Co.....	1,065
	88,385
Similkameen	
Princeton Coal and Land Co.....	12,675
Southeast Kootenay	
Crow's Nest Pass Coal Co.....	797,010
Corbin Coal and Coke Co.....	52,955
	849,965
Gross production of coal.....	2,060,804

Of this coal about 409,000 tons was made into coke—nearly 360,000 tons at the Crow's Nest Pass Coal Co.'s ovens at Fernie and Michel, southeast Kootenay and the remainder at the Canadian Collieries company's ovens at Union Bay, Vancouver Island. The quantity of coke made was about 248,000 long tons, of which 239,000 tons was made in the Crowsnest district and 9,000 tons on Vancouver Island.

After deduction of the amount of coal made into coke, the net quantity to be taken into account as part of the mineral production of British Columbia in 1915 is approximately 1,652,000 tons. While there will be some change made after the final returns for the year are received, it will not be sufficient to considerably affect the total as here given. The net production of coal in 1914 was 1,810,967 long tons, so that there will be a net decrease for 1915 of about 159,000 long tons. On the other hand there will be a gain in coke, for against a production of 234,577 long tons in 1914 the estimated quantity for 1915 is 248,424 tons. The difference in value between the production of coal and coke combined in 1914 and 1915 will be \$473,303, the respective totals being \$7,745,847 for 1914 and an estimated total of \$7,272,544 for 1915.

COMING MEETINGS

Western Society of Engineers' annual meeting will be held in Chicago, Ill., Jan. 12, 1916. Acting Secretary, E. N. Layfield, 1735 Monadnock Block, Chicago, Ill.

Engineers' Society of Pennsylvania will hold its annual meeting at Harrisburg, Penn., Jan. 14, 1916. Secretary, E. R. Dasher, 30 South Front St., Harrisburg, Penn.

American Society of Civil Engineers' annual meeting will be held at the society house, 220 West 57th St., New York City, Jan. 19 and 20, 1916. Secretary, C. W. Hunt.

Engineers' Society of Western Pennsylvania will hold its annual meeting Jan. 18, 1916, at Pittsburgh, Penn. Secretary, Elmer K. Hiles, 2511 Oliver Building, Pittsburgh, Penn.

United Mine Workers of America will hold its annual convention in St. Louis, Mo., Jan. 17, and continuing for three weeks. Secretary-Treasurer, William Green, 1102 Merchants National Bank Building, Indianapolis, Ind.

American Institute of Mining Engineers will hold its 112th and annual business meeting at the headquarters of the institute, 29 West 39th St., New York City, on Feb. 15-17, 1916. Secretary, Bradley Stoughton, New York City.

*Victoria, British Columbia.

Events of the Past Year

Jan. 1—F. K. Lane, the Secretary of the Interior Department, affirms the order of May 4, 1914, requiring the exclusive use of permissible explosives in the coal and asphalt mines of the Choctaw and Chickasha Nations, Oklahoma.

Jan. 5—Hywell Davies and Daniel J. Keefe appointed by the United States Department of Labor to help end the eastern Ohio strike.—Colorado Fuel and Iron Co. posts notices calling on men to elect representatives to a joint meeting of miners and company officers to be held at Denver, Colo.

Jan. 7—Three indictments with a total of 126 counts found against the Philadelphia & Reading Coal and Iron Co. for alleged violations of the interstate commerce laws.

Jan. 19—Receivers are appointed for the J. V. Thompson properties in Greene County, Pennsylvania, and elsewhere.—First conference between representatives of miners and officers of the Colorado Fuel and Iron Co. convenes.

Jan. 20—Peter R. Stewart and Fred W. Holt, former president and secretary of the United Mine Workers in Arkansas, Oklahoma, and Texas, with five others, pleaded guilty to violence in the Hartford Valley strikes.

Jan. 25-29—J. D. Rockefeller, Jr., testifies before Federal Industrial Relations Commission.

Jan. 31—Fire breaks out at the Black Hawk mine of the Black Hawk Coal Co., near Price, Utah.

Feb. 6—Explosion at the Carlisle mine of the White Oak Fuel Co., Carlisle, W. Va. Twenty men killed and four injured.

Feb. 8—Catlin bill relating to anthracite mine laws is introduced.

Feb. 9—An incursion of water from the old Southfield colliery into South Wellington mine No. 1 drowns 20 men of the Pacific Coast Coal Co. near Nanaimo, B. C.—The Mines and Mining Committee of the West Virginia House of Representatives and Senate hold a hearing relative to a law requiring payment for mining by weight instead of by car.

Feb. 12—Troops are withdrawn from the mining camps in Arkansas, having been on duty since Nov. 6 of the previous year.

Feb. 17—Explosion at Oakwood shaft of the Prospect colliery of the Lehigh Valley Coal Co. near Wilkes-Barre, killing 13 men and boys.

Feb. 18—Five miners killed in explosion at the mine of the Atlas Coal Mining Co., Rich Hill, Mo.

Feb. 23—Green antiscreen law declared constitutional by Supreme Court.

Feb. 24—Child labor law approved in Alabama, forbidding the employment of children under 16 at quarries, mines, coal breakers or coke ovens.

Mar. 2—Report of Davies and Keefe on the eastern Ohio strike situation, after being held back for several conferences, is delivered to the President.—Explosion at No. 3 mine of the New River & Pocahontas Coal Co., Layland, W. Va.

Mar. 6—Five men walk out of Layland mine, and rescuers find 42 men barricaded inside.

Mar. 18—Contract made between miners and operators in the Winding Gulf field of West Virginia, subject to referendum.

Mar. 28—The miners employed by the members of the Western Coal Operators' Association of Alberta and the Crownsnest district of British Columbia voted to accept the settlement made by the officers of the United Mine Workers.

Apr. 10—Coshocton strike of 12½ months ended by referendum of miners; scale signed Apr. 12.

Apr. 13—Three hundred miners said to be buried alive in the cave-in of a mine near Shimonoseki, Japan.

Apr. 14—Fred C. Keighley, general coal and coke superintendent of the Oliver & Snyder Steel Co., commits suicide.

Apr. 22—Indiana coal operators write President Wilson urging that permission to organize for restriction of competition be given them by the Federal Trade Commission.

Apr. 24—Canton conference on eastern Ohio strike opens.

Apr. 30—Judge Kunkle of the Dauphin County Court upholds constitutionality of the coal tax act of 1911.

May 3—John R. Lawson, member of the International Board of the United Mine Workers of America, is convicted of causing the death of John Nimmo, a deputy sheriff, on Oct. 25, 1913.

May 4—The Ohio Supreme Court declares the law forbidding the discharge of an employee for belonging to a labor union is unconstitutional and therefore void.

May 6—Gallagher amendment to the Green antiscreen law passed. This practically wipes out the previous legislation which provided that the operators in Ohio must pay for all coal mined, both large and small. Bill signed by Governor May 27.

May 8—Agreement was made for the ending of the eastern Ohio strike which lasted 13½ months and cost the union \$1,400,000. This agreement was signed May 13.

May 13—Industrial Relations Commission renews its session in Washington and examines witnesses regarding the Colorado strike.—Order in council issued by British Government prohibiting the exportation of coal except subject to special license.

May 14—The Crow bill amending rule 18 of the Bituminous Mine Code of 1911 is signed by the Governor of Pennsylvania. It provides that in narrow places or entries boreholes need only be driven ahead of the mining when clay veins, spars or faults are encountered.

May 24—Explosion at No. 1 mine of Smokeless Valley Coal Co. near Johnstown, Penn. Nine men are killed.

June 1—Governor Brumbaugh of Pennsylvania signs two bills permitting coal operators to hire any competent men as foremen and assistant foremen and making the engaging of certificated men unnecessary. He also signs the bill providing for an increase in the number of mine inspectors in the anthracite region from 21 to 25.

June 2—The Workmen's Compensation Act and an act creating the Bureau of Workmen's Compensation of the Department of Labor and Industry are signed by Governor Brumbaugh of Pennsylvania; also an act providing for the creation and administration of a state insurance fund, one regulating private corporational insurance and another empowering the establishment of employers' mutual liability insurance associations.

June 3—A supplementary act was signed to exclude domestic servants and agricultural laborers from the operation of the foregoing act.—Decision of Judge Ruppel in Pennsylvania that mine owners could not be held for stream pollution resulting from the water of the mine mingling with that of the stream.

June 7—Dawson bill approved by the Governor of Pennsylvania. It levies a tax of $2\frac{1}{2}$ per cent. on all anthracite mined and washed in Pennsylvania, gives one-half to the state for roads and one-half to municipalities where coal is taken.

June 8—Order of Council in Alberta, Canada, published, requiring more accurate and elaborate plans.

July 12—J. A. Holmes, Director of the United States Bureau of Mines since its inception in 1910, dies in Denver, Colo.—Order of Kokoaal holds its annual meeting and decides to reorganize and change its name to the National Coal Association.

July 13—F. A. Hill, president of Madeira, Hill & Co., dies at the age of 56 years.

July 15—The Executive Committee of the American Mine Safety Association decides to merge the association into the National Safety Council.

July 17—C. C. Rose, general superintendent of the Delaware & Hudson Co., dies at the age of 78 years.

July 27—Explosion at No. 1 mine of the United Coal Co., at Christopher, Ill. Nine men killed.

July 28—United Mine Workers of America and the Western Federation of Miners decide not to unite.

July 30—A mine-car accident kills nine men at Patterson No. 2 mine, Elizabeth, Penn.

Aug. 11—The Interstate Commerce Commission orders change in carload freight rates in the West.

Aug. 12—Formation of Joseph A. Holmes Professorship in Safety Engineering at University of Colorado.—The Interstate Commerce Commission orders that Eastern railroad freight rates on anthracite coal be reduced 10c. to 80c. per ton. (Action on this decision has been several times delayed and it will now become operative on Apr. 1, 1916, if not further deferred.)

Aug. 27—Van H. Manning is appointed to succeed J. A. Holmes, deceased, as director of the United States Bureau of Mines.

Aug. 31—The Orenda Mine of the Merchants Coal Co., at Boswell, Penn., explodes, killing 19 men.

Sept. 1—The Colorado Fuel and Iron Co. posts notice that no one will be employed who is less than 16 or over 49 years of age.

Sept. 7—The district convention of the anthracite region meets at Wilkes-Barre and demands an increase of 20 per cent. in wages, recognition of union, an 8-hr. day, run-of-mine payment, a 2,240-lb. ton and other concessions.—Four men are entombed in the Dunmore No. 1 vein at the mine of the Archbald Coal Co., Archbald, Penn. After 27 hr. of digging they are rescued.

Sept. 20—J. D. Rockefeller, Jr., begins his visit to the mines of the Colorado Fuel and Iron Co.

Sept. 27—Accident at Foster's Tunnel near Coaldale, Penn. Nine men were rescued after six days' entombment.

Oct. 2—J. D. Rockefeller, Jr. presents his industrial representation plan to the miners.

Oct. 26—Forestry services of the Pennsylvania R.R., the Philadelphia & Reading Coal and Iron Co., the Lehigh Valley Coal Co., the Susquehanna Coal Co. and other Dauphin County timber owners form the Susquehanna

Forest Fire Protective Association.—F. P. Walsh is engaged to bring suit for libel on behalf of ex-President Howat of District 14 against Keith and Hazen. Howat is accused of receiving bribes to conclude an agreement with the operators.

Oct. 28—The Anthracite Coal Tax Law known as the Roney Act is declared unconstitutional by the State Supreme Court.—United States District Court decrees that the ownership of the Lehigh & Wilkes-Barre Coal Co. by the Central Railroad of New Jersey is a combination in restraint of trade and that the latter must dispose of its interest in the former.

Nov. 16—Explosion at the mine of the Pacific Coast Coal Co., Ravensdale, Wash., kills 31 miners.

Dec. 1—R. A. Phillips resigns as general manager of the Delaware, Lackawanna & Western Railroad Co.'s coal department and is succeeded by Arthur C. La Monte.

Coal and Coke Production in the United States During 1915

The following tables have been compiled largely from data communicated by the various state mine inspectors, estimates having been made only where no such statistics were available, but in all cases upon the basis of reliable information:

PRODUCTION OF COAL IN THE UNITED STATES

States	1914	1915
	Quantity* Short Tons	Quantity† Short Tons
Alabama	15,593,422	16,100,000
Arkansas	1,836,540	2,000,000
California and Alaska	13,974	15,000
Colorado	8,170,559	8,537,770
Georgia and North Carolina	6166,498	180,000
Illinois	57,589,197	56,900,000
Indiana	16,641,132	15,696,921
Iowa	7,451,022	7,500,000
Kansas	6,860,988	6,775,000
Kentucky	20,382,763	21,375,000
Maryland	4,133,547	4,600,000
Michigan	1,283,030	1,260,000
Missouri	3,935,980	4,000,000
Montana	2,805,173	2,750,000
New Mexico	3,877,689	3,858,554
North Dakota	506,685	600,000
Ohio	18,843,115	22,000,000
Oklahoma	3,988,613	3,780,000
Oregon	51,558	50,000
Pennsylvania, bituminous	147,983,294	150,000,000
South Dakota	11,850	10,000
Tennessee	5,943,258	6,000,000
Texas	2,323,773	2,300,000
Utah	3,103,036	3,083,676
Virginia	7,959,535	7,900,000
Washington	3,064,820	2,300,000
West Virginia	71,707,626	72,500,000
Wyoming	6,475,293	6,300,000
Total bituminous	422,703,970	428,371,921
Pennsylvania, anthracite	90,821,507	89,000,000
Grand total	513,525,477	517,371,921

*United States Geological Survey figures. †Estimated.

b Georgia only.

PRODUCTION OF COKE IN THE UNITED STATES

States	1914*	1915
	Short Tons	Short Tons
Alabama	3,084,149	3,110,000
Colorado	666,083	850,000
Georgia	24,517	35,000
Illinois	1,425,168	1,650,000
Indiana	2,276,652	2,675,000
Kentucky	443,959	680,000
New Jersey	255,283	260,000
New Mexico	362,572	364,873
New York	457,370	460,000
Ohio	521,638	550,000
Pennsylvania	20,258,393	24,873,150
Tennessee	264,127	270,000
Virginia	780,984	790,000
Washington	84,923	91,000
West Virginia	1,427,962	1,203,004
Maryland		
Massachusetts		
Michigan		
Minnesota		
Utah		
Wisconsin		
Total	34,555,914	40,462,027

*United States Geological Survey figures.

Business Aspects of the Coal Industry in 1915

BY A. T. SHURICK

SYNOPSIS—The year has been one of unprecedented readjustments in the channels of trade, particularly in the foreign markets. Uncertainties and alarming cross-currents were the salient features tending to create a hesitancy and lack of confidence. Important expansion in export trade occurred. The first six months was a period of severe depression which was compensated for by an equally large expansion over the closing period.

In spite of uniform and persistent reports of unparalleled prosperity in all lines, the conservative element in the business world was sufficiently noncommittal toward any broad constructive program to apply the brakes more severely than basic conditions seemed to justify when the pace showed indications of becoming too rapid.

One of the most impelling factors was the tremendous expansion in our foreign trade, the close of the year finding the country doing a five billion dollar business, surpassing England in this respect for the first time. Business and trade conditions were uniformly optimistic in every respect. Toward the close of the year it was estimated that the earnings of the Steel Trust alone were on the basis of \$250,000,000 annually. The capacity of this tremendous organization was being strained to the breaking point at the year end, production being at the rate of 15,000,000 tons of finished steel per annum, as compared with 9,000,000 tons in 1914 and the record of 12,375,000 tons in 1912. The statements of unfilled tonnage advanced by leaps and bounds, the gross increase for the month of November amounting to over 1,000,000 tons as compared with an increase of 2,250,000 during nine months in 1909, when negotiations were on an exceedingly active basis.

Other evidences of prosperity piled up with startling rapidity toward the year end. It has been estimated that this country has bought back a billion and a half dollars' worth of railroad securities alone since the great European struggle began. Much of this money has undoubtedly gone toward the purchase of munitions and supplies, it having been conservatively estimated that the cost of the war to the end of the year of 1915 was close to 40 billion dollars, France alone having expenditures at the rate of \$420,000,000 dollars a month.

The thoughtful student of the world's affairs stands aghast at the terrible calamity to which Europe is committed, not only from a sense of the keenest sympathy for her peoples, but also because of the sharp disillusionment we have had concerning our own safety. But it is no time for hypocritical protestations concerning the benefits accruing to us. The European demand for commodities of all kinds is insistent and of unprecedented proportions, and we should meet the issue to the best of our ability, even as we would expect those same countries to do likewise should we be embroiled in a similar calamity.

As a result of the large contracts taken at the close of 1914 at low prices, the new year opened with the bitu-

minous situation weak, while the industrial outlook was discouraging, and there were large surpluses at all the distributing centers. The base price on the West Virginia grades at Hampton Roads for Boston delivery was \$2.85, and some of the large distributors announced an advance on this in February, though it was noted that careful buyers could do somewhat less than the announced circular. Prices gradually went off until in May the best grades were obtainable at \$2.50 f.o.b. Norfolk.

Georges Creek grades, shipments on which had fallen behind at the close of 1914, were gradually made up during the opening period of the new year, and when the contract season opened up producers of this coal were very conservative on taking business, it becoming more and more evident that this high-quality fuel will ultimately be diverted to other directions. Determined efforts were made by Pennsylvania operators to invade the New England market at the beginning of the year; a great deal of coal was taken for testing purposes, and some tonnage was covered, though not as large as had been anticipated.

The improvement at interior points, too far removed from seaboard to experience the stimulating effects of the heavy foreign demand, was probably less perceptible. In fact, there was no little disappointment expressed over conditions, though there was undoubtedly a persistent betterment throughout the year, the trouble apparently being that the improvement failed to attain the expected proportions.

ANTHRACITE MARKET CONDITIONS

The opening period of the year, usually an active one in the anthracite trade, found the market under heavy pressure. This was due to the exceptionally mild weather which prevailed almost continuously until the close of March, when a sharp cold snap, supplemented by an improvement in industrial conditions, owing to the large influx of munition orders, started coal moving in a larger volume. In spite of the fact that the April circular generally prevailed through March, this was probably the best month of the opening period. The April reduction started the usual rush for coal, and the collieries went on full-time operations, though production was somewhat limited by the Easter holiday. An unprecedented snowstorm marked the opening days of April and was a potent factor in aiding the retail trade to clean up their surplus coal in preparation for the stocking period.

A unique situation in stocking operations developed as the season advanced, the usual orders coming in, but in nearly every case accompanied by memorandums that the orders were given subject to deferred payments until Sept. 1. As the season progressed, the extreme dullness of the customary midsummer period came into full force. Stove coal, which was relatively active at the opening, was the only size that made any pretense of bringing the full circular. Midsummer found the collieries all on short time and heavy tonnages going into storage, particularly of the steam sizes. Pea coal was under especially severe pressure at this time, large tonnages offering down to

\$1.50, with few buyers, and it also developed that the big companies had protected inside customers for a number of months ahead at the June circular.

The low point of the trade was reached in August, the prepared grades selling down to the April circular in many instances and the additional inducement of no tax being offered when the buyer would take a block of chestnut. A gradual and persistent improvement began with the advent of fall season, though prices continued badly off circular with one or two exceptions until October, when cool weather caused the dealers to become anxious. A pronounced expansion in manufacturing and industrial enterprises, together with incipient car shortages and lower temperatures as the season advanced, accelerated the trade, and by November the anthracite market was well into its stride. Buyers began to consider the strike possibilities of next April also, so that the large companies received many orders from consumers anxious to be placed on their list of regular customers.

Dealers at Down East points estimated that the mild winter that marked the opening period of the year made a difference of approximately 10 per cent. in tonnage, which probably accounted for the fact that anthracite arrivals at Boston to Dec. 1 were 200,000 tons behind those for the same period the preceding year. This unsatisfactory condition of the market during the first part of the year was no doubt responsible for the heavy shipments of coal at the April circular during March, these exceeding that of any previous year by a substantial margin.

The summer trade passed along on about a normal basis, and some interest was evinced in the market when the exorbitant demand of the anthracite-mine workers was announced, but it was not until late fall when deliveries began to fall behind that the business showed any noteworthy activity. A succession of severe storms in November, a scarcity of vessels and higher ocean freights threw the companies further and further behind on deliveries with the approach of the year end, so that the closing period was marked by a spurt of activity all along the line.

THE BITUMINOUS COASTWISE TRADE

The bituminous coastwise shipments for the year were somewhat less than in 1914, though this was in a measure due to the quarter-of-a-million-ton contract of the New Haven road, placed with provincial interests. The navy contract and the half-million-ton contract of the Panama R.R. in November gave evidence of the weak condition of the market, these contracts forming the basis for considerable business later. Competition was keen, and occasional deep cuts showed evidence of the weak position of the sellers.

When the big navy contract for 400,000 tons was concluded at 10c. less than the Panama R.R. contract, this was construed as tangible evidence of the soft condition of the market. A significant feature of the award on this contract was the fact that Hampton Roads shippers met the low \$2.60 price, which was the successful bid for loading Pennsylvania coal at Philadelphia on the contract for 1914. At midsummer competition was keen for business at the \$2.60 level, while output was running so far ahead of requirements that the railroads were forced to take drastic action against shippers who did not release equipment promptly.

In December the Boston & Maine R.R. put out a tentative inquiry for three-quarters of a million tons on a long-term contract. This was watched with much interest, but apparently no operator cared to commit himself over such a long period. The closing of the Panama R.R. contract, involving approximately half a million tons in the early fall, represented the low point of the year, the market from then on showing a gratifying improvement.

THE LAKE TRADE

As a result of the unusually large tonnage carried over at the upper Lake ports at the opening of the season, shipments to the Northwest via the water route proved a distinct disappointment to the trade. The gross receipts for the season at Duluth-Superior amounted to 8,343,932 tons, as compared with 9,488,297 tons for last season.

Considering that the 1914 movement itself was a disappointment, these figures cannot be regarded as favorable, particularly when it is remembered that the increase is centered on anthracite entirely. As a result of the labor disturbances in Ohio and the readjustments made necessary by the Green anti-screen law, shippers in that state fell behind heavily in their Lake tonnage. One of the largest Ohio companies, the Sunday Creek Co., did not ship a ton of Lake coal during the entire season, and it is estimated that Ohio's Lake tonnage for the season would be about 50 per cent. of that for the active year of 1913.

THE EXPORT TRADE

As a result of the almost unparalleled publicity given to developments in the export trade, with exaggerated rumors of all kinds following in rapid succession, the final figures when available will prove not only a distinct surprise, but a keen disappointment as well. Conservative estimates based on the best information available at this time show that our exports will be something less than 20,000,000 tons, or a decline of 2,000,000 tons from last year. This is of course due to the severe depression prevailing throughout Canada during most of the year, this market absorbing a large proportion of our exports.

Nevertheless the year has been by far the most important in the history of the American export trade. Excluding the Canadian and other home markets, and turning to what may properly be considered the strictly competitive markets of the world, our coals have made a substantial inroad. The Italian Government has apparently established permanent purchasing arrangements at this end, while test cargoes of American coal have been shipped to many European points and a few contracts for substantial tonnages closed. There has also been a tremendous expansion in our South American trade, the pre-war tonnage of 600,000 per annum having been very nearly trebled in the past year; but in spite of this enormous increase, we are still handling only 15 to 20 per cent. of the business. Great Britain on one side and Australia on the other are aggressively contending for their positions as leaders in each of these respective markets.

Practically all of this export trade was done on a f.o.b. basis at loading ports, in most cases cash against documents being demanded. The best period of the year was during midsummer, July being the largest month. The domestic market was generally weak at this time, making plenty of coal available, while shortly after this conditions firmed up and ocean freights advanced rapidly to practically prohibitive levels in so far as negotiating new business on coal was concerned.

A close scrutiny of the offshore business discloses some significant points. Thus while Baltimore, Philadelphia and Hampton Roads showed a consistent smashing of all previous export records, it is doubtful if these were sufficient to compensate for the loss in bunkering tonnage normally used at New York. However, American coals undoubtedly gained a strong foothold in many of the foreign markets during the year. Italy, for instance, took 1,250,000 tons during the 11 months ending May, and a regular service by two 7,000-ton ships was established between Baltimore and Alexandria, Egypt. Georges Creek coal particularly became an important factor in the offshore business, this fuel having many properties in common with the high-grade Cardiff coals, which have made Great Britain the leading fuel exporter of the world.

While the seaboard market was experiencing beneficial effects from the heavy European demand, the large number of inquiries tending to have a stiffening effect on prices, even though these did not develop into a heavy business, the interior markets were suffering an almost equal loss due to the heavy decline in exports to Canadian points. General manufacturing industries there were under heavy pressure throughout the year, and as a result the movement in that direction was probably about one-half normal.

It was not until well on toward August that the export trade experienced any notable increase, the principal incentive at that time being the British Government announcement of the suspension of exports from Great Britain effective Sept. 1. The trade continued active, showing a large increase in tonnage from certain ports and with prices on this business ranging approximately 10c. above that in the domestic trade until October, when the paucity in the supply of vessel tonnage began to exert a restraining influence. It is also developed that Great Britain was continuing shipments in spite of the apparent order of the government to the contrary; this, together with the vessel shortage toward the close of the year, which reached an acute stage and was accompanied by violent increases in freight rates to unprecedented figures, caused the export trade to dwindle off to practically nothing. As evidence of the heavy decline, the Baltimore tonnage for November amounted to only 46,500 tons, as compared with 141,072 tons in October.

SHIPPING CONDITIONS

The vessel situation promises to be such a potent factor in our progress in the export trade that the question seems to call for more than a cursory examination. Not only was this the controlling influence in the foreign coal trade, but the paucity of vessel tonnage toward the year end created such an unprecedented congestion at the leading exporting ports on the Atlantic seaboard as to prove a vital factor in our domestic business.

Authorities on shipping state that on the declaration of war, 6,187,060 tons of German and Austrian shipping was immediately immobilized, of a total tonnage afloat at that time of 45,404,000 tons. Since the war began, however, 1,200,000 tons of German shipping has been captured by the Allies and restored to traffic, although about 1,000,000 tons of Allies' and neutral shipping has also been sunk by the German navy. The immobilization and impressment of steamers for government transport use have further reduced the tonnage available for merchant service between 20 and 25 per cent.

This worldwide shortage of ocean transportation facilities interrupted all plans of prospective coal exporters, ocean freights fluctuating over the widest ranges on record. The stringency was not at first felt in the coastwise business, even when a number of vessels had been taken out of that service for use in the oversea trade, but with the prolonged heavy weather there was a resulting rapid advance in freights, the year winding up with an acute famine of coastwise tonnage and exorbitant rates. Shipping profits and sales of vessels have been made on unprecedented lines, due to the tremendous shrinkage in tonnage.

There were decidedly encouraging developments in shipping circles toward the year end, shipbuilding interests being operated at the highest capacity in the history of the country. There were at this time 98 merchant vessels of more than 3,000 tons' capacity in process of construction, of which 11 were colliers which will go into service during the early part of the current year. These vessels will no doubt prove a factor in the export trade for the year, but it must be remembered that a shortage of vessels will prevail during a continuance of the European War and that no material relief can be anticipated during that time.

LEGAL AND LEGISLATIVE DEVELOPMENTS

The year has witnessed an unusual series of legislative readjustments, particularly as concerns the anthracite industry, though in no case have these been of such a scope that they could be regarded as epoch-making changes in the industry.

The close of 1914 was marked by one of the most drastic decisions affecting the anthracite industry that has been made for some time; that is, the flat reduction of 40c. per ton on freights to Philadelphia ordered by the Public Service Commission. This decision was to become effective Jan. 13, but the carriers appealed, putting up a satisfactory bond, guaranteeing refunds in the event of the decision being sustained, so that conditions were nominally unaffected. The matter dragged along throughout the year without any final action, and it was rather lost sight of in subsequent developments.

In October the Interstate Commerce Commission also came forward with a sweeping decision ordering substantial reductions in interstate freights as against the intrastate rates effected by the Public Service Commission to tidewater. This also was appealed, so that both of these rather comprehensive attacks on the anthracite companies, through their carriers, remained in *status quo* at the end of the year.

The freight decision of the Interstate Commerce Commission caused a mild flurry in the New England trade, but it was generally felt that any downward revision in freights would be made up by an equal revision upward in mine prices. The decision of the Pennsylvania Supreme Court on the state tax was also viewed with interest, though the long delay before this can possibly occur has not made it the subject of much serious thought.

The evident determination of the Pennsylvania legislature that anthracite coal shall carry an extra and special tax was made clear early in the year by activity of this body. A bill was introduced at that time providing for a repeal of the act of 1913, but at the same time another bill was introduced and passed, which was devised for the special purpose of overcoming the legal objections raised to

the previous act. The matter was of course carried into the court, where a favorable decision for the state was rendered in the initial action, though this was reversed by the higher court later in the year.

Action against the alleged hard-coal combine progressed somewhat during the year, the United States Supreme Court upholding the decision of the District Court that the Lackawanna was violating the commodities law of the Hepburn Act concerning the matter of the 65-per cent. contracts. The courts directed that the companies should be definitely separated and steps were taken to comply with this mandate.

The Reading Co., however, obtained a fairly favorable decision on this same question in the United States District Court at Philadelphia, though it was ruled that because of the company's close connection with the Central Railroad of New Jersey, the latter must effect a separation with the Lehigh & Wilkes-Barre Coal Co., and the attorneys for both sides were instructed to confer upon the plan for effecting a dissolution.

In Ohio the operators succeeded in getting an amendment to the Green screen law whereby mining could be conducted on a mine-run basis, but this proved of little consequence since the miners could not be induced to accept any such terms. There were also important developments in this state in the way of readjustment in freight rates. Both the Hocking and eastern Ohio operators took aggressive action on this matter, with the result that the Hocking producers succeeded in obtaining a reduction of 15c. from the \$1 rate to Toledo, while the indications were hopeful for the eastern operators to also obtain some concessions.

THE CONCLUDING PERIOD

The closing period of the year was marked by a sharp reaction in the long dullness due to a combination of transportation difficulties, both by rail and water, and to a substantial improvement in industrial conditions creating a broader market and heavier consumption. Car supply in the Pennsylvania district at this time was frequently only 35 to 40 per cent. requirements.

But in spite of this gratifying spurt, soft spots were still observable at different points. At Down East centers there was unusually aggressive competition for business on the new April contracts. Prices were bid down in a most discouraging manner, and the year end found most of the business in this district closed at figures ranging well under those of even the low period of 1914.

The prompt market, however, was uniformly active and profitable in all directions. Car and labor shortages became more pronounced as the season advanced, this being supplemented by an acute congestion at some of the chief distributing centers. Consumers became apprehensive and prices advanced even faster than had been anticipated, though as a result of the shortage it is highly doubtful if very much business was done at these levels.

A group of favorable conditions also developed at interior points near the year end, which served to carry the trade over the uncertain period that marked the termination of the lake shipping season, in a most satisfactory manner. The lake movement had been so light that the loss was not particularly noticeable; the iron and steel industry was absorbing a heavier tonnage than ever before, while there was a freer stocking movement among consumers in anticipation of a car shortage, and also against a possible cessation in mining on Apr. 1.

French Coal Industry Under War Conditions

Among the many difficult problems the French Government has had to face during the present war, says the *Annalist*, has been that of supplying the nation's needs in coal. In normal times much of that commodity, especially anthracite, came from the Belgian pits of Charleroi, while Britain was also a large contributor of the Welsh steam and other qualities.

Although her northern coalfields have always provided a large percentage of the national output, France herself has never been able to supply sufficient for her own requirements. With this particular territory in the enemy's hands for upward of a year—now the scene of some of the bloodiest fighting the world has ever known—with many of her miners engaged at the front in the struggle for victory and the added difficulties of transport coupled with the Government requisitioning for the upkeep of the factories, it is not surprising that prices have soared skyward. The result has been the usual one of inflicting great hardship on the poor. A comparison of pre-war and present retail quotations in francs per 1,000 kilos is sufficiently striking:

	1914	1915
Anthracite	70-75	130
House coal	55	95
Boulets†	45	90
Coke	35	75*

*Now very inferior quality. †A composition of coal, sawdust, tar, etc.

It is interesting to turn to the general situation of the various northern colliery companies during the present crisis. Of those in the hands of the enemy it is of course impossible to speak, and how numerous these are may be judged from the names followed by an asterisk in the recent quotations published in the Paris "official list" and appended here:

	Price July 31, 1914	Present Price		Price July 31, 1914	Present Price
Aniche*	2,401	....	Flines*	49	....
Anzin*	6,975	....	Ferfay-Cauchy ..	245	....
Bethune	15,680	790	Lens*	1,175	....
Bruay	1,265	1,389	Lievin*	3,795	3,600
Carvin*	680	....	Ligny-les-Aires ..	562	560
Clarence	186	199	Marles, 70%	3,955	....
Courreires	1,600	1,720	Marles, 30%	2,900	2,995
Douchy*	675	....	Meurchin*	2,050	....
Dourges*	400	399	Ostricourt*	230	....
Droucourt*	6,000	....	Thivencelles*	1,500	....
Escarpelle*	640	....	Vicoigne et Noeux	1,490	1,720

†1-50th share.

Most of the foregoing are in ordinary times regularly listed on the Bourse at Lille, as the companies themselves, with their directors, belong to that region, but few of them have published the customary balance sheet or distributed any dividend during the war. With two exceptions, however (Bethune and Lievin), and in spite of the difficulties previously mentioned, coupled with the fact that the pits are nearly all situated in the war zone and suffering from a more or less continuous bombardment, the share quotations are above those of the pre-war days—a somewhat surprising fact, but significant of a hardy belief in the eventual pushing back of the invader and the recovery of the properties intact. In what condition the Germans will ultimately leave the coal fields so long in their possession, nobody can say.

The impression of the *Banque and Bourse Journal*, however, is frankly pessimistic. Dealing with the foregoing prices it states: "The present quotations of most of these colliery shares appear disproportionately inflated, and it is doubtful whether they can be maintained at such a level with a restricted output inevitable."

The New York Market in 1915

SYNOPSIS—The first half of the year was very dull in anthracite, and unusually heavy concessions on the circulars were made. Activity prevailed over the closing period, owing to both increased demand and congestion in transportation. Much the same conditions ruled in bituminous prices which advanced to panic levels toward the close of the year.

The anthracite coal industry during the year 1915 was unsatisfactory. The demand was spasmodic and not well distributed throughout the 12 months. The year closed with a spurt, but even this did not help production to any great extent, and the tonnage figures show a decline of about 2,500,000 tons below 1914. Mine operators attribute much of this loss to the industrial depression in the early part of the year, unfavorable weather conditions and the failure of the public to take advantage of the usual spring reduction of 50c. per ton on the prepared sizes. When weather conditions became more favorable, the operators found themselves in the throes of an unprecedented freight congestion that tied up many thousand cars, including loaded coal cars. This caused a car shortage, which resulted in most of the mines working scarcely half time, although there were sufficient orders on hand to operate nearly full time.

The expiration of the agreement between the operators and mine workers on Apr. 1, 1916, occupied some attention toward the close of the year. Wholesale dealers sensed an active situation by the middle of November and hesitated about taking on any new contracts, particularly for buckwheat. In the fall the railroads began to stock considerable coal, mostly of the smaller sizes.

The decision of the Interstate Commerce Commission reducing the rates on anthracite coal was one of the principal developments of the year. These rates, which were to have been put into effect on Oct. 1, would have resulted in a readjustment of the business at tidewater points, but the matter was appealed.

The year opened under favorable conditions, but near the end of January the demand relaxed on account of the mild weather. Retail dealers began to restrict their orders, and during February the demand was not brisk. No better conditions developed in March, and orders slackened considerably in anticipation of the usual spring reduction. The market saw much free individual coal in March, and considerable was disposed of at less than the April circular. The mines also felt the effects of market conditions, and some were on half time.

THE MIDSUMMER DULLNESS

At the opening period, Apr. 1, shippers were busy, but not rushed. The mines worked nearly full time, but not for long. Consumers did not take advantage of the low-priced coals, and soon the companies began to slow down. Little coal was ordered by the larger tidewater dealers, while individual coal became more plentiful and prices were cut, though the company circular was maintained. As a result of the curtailed production to prevent overstocking the market, the steam sizes became scarce, but not sufficiently so to cause any trouble; this prevented cutting prices on these sizes.

What was thought to be low ebb in the hard-coal situation was reached in the summer months beginning with June, when individual prepared coals were sold at less than April prices. The mines worked less than half-time, and demand was practically at a standstill. Pea coal could be bought at near the \$3 mark, but the high grades of the smaller sizes, which are mostly on contract, were short at some of the upper ports.

It was not until September that a definite improvement appeared. Inquiries increased, railroads began to stock up, shipments to the West became heavier and large consumers began to show signs of apprehension over the possibility of a suspension in the coming spring. Demand took a sudden spurt in October, and the railroads became congested with export freight, holding back coal shipments. Prices then stiffened, and the situation became stronger. From that time on there was a shortage of coal, although not serious enough to cause any great inconvenience.

For the first quarter of the coming year wholesale dealers look forward to an active market. Demand is expected to keep up to the top-notch, and many believe that before Apr. 1 much of the lost tonnage of last year will have been recovered.

During December shippers had considerable difficulty in getting coal to tidewater on account of the freight congestion, which tied up about 50,000 cars of various kinds of freight, including much coal. Embargoes were placed by the railroads, and there was a serious shortage of coal at the tidewater docks. All sizes sold at full company price, and individual coals in some sizes were sold at premiums ranging up to 35c. Most of the higher grades of the buckwheat coals were out of the market.

Prices at New York tidewater, f.o.b., gross tons, from Sept. 1 to April 1, follow:

	Upper Ports	Lower Ports		Upper Ports	Lower Ports
Broken.....	\$5.10	\$5.05	Pea.....	\$3.55	\$3.50
Egg.....	5.30	5.25	Buckwheat No. 1....	2.80	2.75
Stove.....	5.30	5.25	Buckwheat No. 2....	2.30	2.25
Chestnut.....	5.55	5.50	Buckwheat No. 3....	1.80	1.75

On some of the Schuylkill steam coals at the lower ports the prices are: Pea, \$3.45; buckwheat No. 1, \$2.45; No. 2, \$1.95, and No. 3, \$1.70. In addition to these prices the Pennsylvania State tax of 2½ per cent. of the market value of the coal is added. The usual spring reduction is as follows: April, 50c.; May, 40c.; June, 30c.; July, 20c.; August, 10c.

Shipments of anthracite and bituminous coal through the New York State Canals for the season of 1915, in comparison with shipments of previous years, in tons, follow:

	1912	1913	1914	1915
Anthracite.....	270,371	258,039	234,823	227,089
Bituminous.....	157,496	136,899	117,971	92,240

THE RETAIL TRADE

The situation in the retail coal trade has been peculiarly difficult and unsatisfactory. The large producing companies did not begin to restrict mining soon enough, and many individual operators flooded the tidewater market with their product. There was a big surplus of coal that the dealers were unable to absorb, and this fell into the hands of jobbers and scalpers who offered it at low prices to the large consumers, such as factories, hotels

and even apartment houses, thereby disturbing much well-established retail trade and compelling the dealers to surrender considerable business or make ruinous prices to hold it.

There is a growing conviction on the part of the conservative wholesale houses and of the principal retailers that a radical change of policy should be inaugurated concerning the distribution of coal in the New York market. The dealers who have ample facilities for handling all the coal that the retail trade can digest and who are the logical and permanent distributors for the wholesalers feel that they are entitled to better protection against this disastrous competition. The wholesale houses are also beginning to realize that unless they wish to extend longer credits and risk losing a great deal of money they must place their coal with those who are entitled to receive it and upon whom they must depend for the bulk of their business.

The situation has been further aggravated by the incursion of certain ice dealers into the coal business. As these people are under no fixed charges in the shape of big plants and the maintenance of costly delivery service and can quit any time conditions are bad, they are able at times to make low prices on special sizes of coal. The coal trade is one of the large sources of revenue for the Dock Department, renting water-front property under long and expensive leases, and it considers this new form of competition in the same light as the storekeepers viewed the free markets on the docks, which the department itself finally felt compelled to do away with.

BITUMINOUS COAL MARKET

There was much uncertainty during the past 12 months in the bituminous market at New York, but there was a revival toward the year end and the trade finished with a rush. Instead of a dead market with the docks overloaded and prices at low ebb, the new year found supplies practically cleaned up and prices higher than in many months.

The market during the year has been affected by war conditions, car shortage, scarcity of labor and low prices. The demand for bunker coal was slack because of the suspension of sailings by many of the passenger steamers, though this was partly made up by the large increase in the number of vessels engaged in carrying export freight.

The shortage of anthracite steam coals was reflected in an increased demand for bituminous, but not sufficiently to influence market conditions. That dealers are anticipating trouble at the expiration of the working agreement between soft-coal operators and their employees was shown at the opening of city bids in November, when instead of the usual 25 or 30 tenders being received, there were only 11. Dealers were not at all anxious to enter into new contracts running into the spring, with the possibility of a suspension of mining. The same care was exercised by wholesale dealers in renewing contracts.

The year opened up with a bright outlook and a demand stronger than for some time. Less demurrage coal was in evidence than in the preceding month and prices on the medium grades ranged from \$2.35 to \$2.55 f.o.b. But there was weakness and depression during the next few weeks, and quite a few shippers had embargoes to contend with. In March the demand eased up considerably, prices for spot coals became low and the efforts

to close expiring contracts at old prices were not very successful.

An inactive market followed, and while some contracts were closed, many buyers held off in the hope that they would be able to close later at still lower figures. Later the market became slightly firmer, with an increase in inquiries for export coal; there was a better tone, and demurrage coal brought \$2.30 instead of \$2 as in the early part of March. At this time the export situation attracted much attention.

MIDSUMMER DULLNESS

The improved conditions were of short duration, however, and June saw a dull market, though with no great quantity of coal at the docks. Lack of cars and scarcity of labor were having their effect on production. Through it all, however, contract holders were taking good tonnages, and the market was not crowded with free coals.

Throughout August no headway was made, operations were slow, and the labor scarcity was much in evidence. It was not until the following month that the turning point was reached. With some grades practically out of the market and very little coal at the docks, the railroads began to lay in supplies. Other consumers soon followed this example, and there was an immediate improvement in demand and prices. The car congestion also became a serious factor at this time, and operators who had orders enough to keep them busy were able to get only about 60 per cent. of their requirements.

The beginning of October saw the first great improvement in the market. With the continued lack of cars and labor and the increased demand, prices advanced sharply. The cheaper grades, which had been selling at prices ranging from \$2.35 to \$2.45, moved readily at an average of 30c. per ton more. The market went up by leaps in December, and quotations of \$4.50 and higher were often heard. There was a serious shortage owing to lack of cars, and while demand was active, most of it was attributed to lack of supply rather than to increased consumption. Slack sold as high as \$2.

Prices on various grades for the year ranged about as follows:

COAL EXPORTS FROM NEW YORK, JANUARY TO OCTOBER

	Anthracite		Bituminous		Coke	
	Tons	Value	Tons	Value	Tons	Value
January....	3,096	\$16,120	1,543	\$7,275	70	\$544
February....	2,847	15,206	1,345	6,106	131	679
March.....	4,603	28,418	554	2,047	31	220
April.....	19,364	92,798	2,966	9,681	40	250
May.....	18,081	85,460	3,044	10,585	628	4,881
June.....	20,696	106,393	4,201	14,046	644	5,252
July.....	29,212	147,947	3,923	10,232	1,656	13,048
August.....	36,008	182,885	8,132	26,557	725	4,715
September..	20,273	89,180	2,568	11,865	2,922	23,210
October.....	16,148	84,632	1,075	4,368	235	1,810

	Georges Creek	South Forks	Nanty Glo	Quemahoning	Fairmont
January....	\$3.10@3.20	\$3.05@3.10	\$2.75@2.80	\$2.75@2.80	\$2.65@1.70
February...	3.10@3.20	3.05@3.10	2.75@2.80	2.75@2.80	2.65@2.70
March.....	3.10@3.25	3.05@3.10	2.75@2.80	2.75@2.80	2.65@2.70
April.....	3.10@3.20	3.05@3.10	2.75@2.80	2.75@2.80	2.65@2.70
May.....	3.10@3.20	3.05@3.10	2.75@2.80	2.75@2.80	2.65@2.70
June.....	3.20@3.30	3.05@3.10	2.75@2.80	2.75@2.80	2.65@2.70
July.....	3.20@3.30	3.05@3.10	2.75@2.80	2.75@2.80	2.65@2.70
August.....	3.20@3.30	2.90@3.05	2.75@2.80	2.70@2.85	2.60@2.70
September..	3.20@3.30	2.90@3.05	2.75@2.80	2.70@2.85	2.60@2.70
October....	3.20@3.30	2.90@3.10	2.75@3.00	2.80@3.00	2.70@2.80
November..	3.20@3.45	3.05@3.30	2.90@3.30	2.90@3.30	2.70@3.00
December..	3.20@4.55	3.20@4.30	3.20@4.30	3.20@4.30	2.90@3.90

Σ

The Outlook in the Lake Trade—The volume of the Lake movement will probably depend more upon the vessel tonnage available than upon the demand in the Northwest, for the iron industry promises such a demand for iron ore as to invite an unusual proportion of the fleet to make the up-trip light.

Market and Shipping Conditions on Atlantic Coast in 1915

By G. G. WOLKINS

SYNOPSIS—Ten months of indifference and two of flurry made up the record of 1915. A moderate export trade was one of the few redeeming features. Pocahontas and New River were weak and wavering until late in the year, when a heavy tonnage had already been sold for 1916-17 at low prices. Georges Creek showed the usual evenness as to output and prices, although export demand affected the volume of coastwise shipments. The Pennsylvania grades sold at 5c. to 10c. less than in 1914 on contracts, but gains in tonnage were small.

The closing months of 1914 gave every indication that 1915 would be another disappointing year, and so it proved for the most part. A moderate demand offshore and a near-panic late in the fall were about all that saved it from a depression similar to that in 1914. The same heedless overproduction in dull times, the same unwholesome scrambling for tonnage far into the future and the same failure of consumers to accumulate fuel were all present in greater or less degree, and taking the coastwise trade by itself, it was not a year of large tonnages. It had most of the features we have come to associate with unsatisfactory seasons.

Shipments of steam coal along the coast were slightly behind 1914, but in view of the 275,000 tons of provincial coal for the New Haven and the Boston & Maine railroads on their last year purchase, the loss was not nearly so great as expected. A deficiency of more than 200,000 tons of anthracite as compared with 1914 can be laid to the mild weather of January and February, together with the slow movement of transportation in the fall. Except for a few conditions that were hopeful, 1915, in the coastwise coal trade, can be regarded first as an indifferent and latterly as an exasperating year.

GENERAL FEATURES

The year opened with large stocks of bituminous, weak prices, a surplus at every loading port and an industrial situation far from promising, except along special lines. Prices especially were under severe handicap, large contracts having been undertaken late in 1914 at figures so low that buyers were led to expect a soft market. Encouraged also by those shippers who controlled no transportation and were therefore hopeful of low water freights, many of the large consumers were dilatory about entering the market. Until August there were those who bought only their current needs, declining to make season contracts until satisfied the low point of the year had been reached. That condition of itself was hard enough to overcome by midsummer, but there was not even the inducement of firm water freights to relieve the dullness. Every plant having a contract was crowded to accept deliveries, and "market cargoes" multiplied at the distributing points.

It remained for a better business outlook, particularly in textiles, to influence buying. Signs of improvement

appeared in June, but not until September did many of the mills resume full time. Through the summer, therefore, the steadying process was very gradual—so gradual it was hardly noticeable. Meanwhile quite a volume of coal had been placed on the same basis as in 1914, and in many instances at 5c. to 10c. less, regardless of whether Pennsylvania, Maryland or West Virginia coals were purchased. In fact, there was a period of several weeks when purchasing agents were inclined to scoff at any attempt to renew 1914 prices. Even in August a few large buyers still refrained from making contracts.

In September, however, deficiencies of equipment on the coal roads were beginning to be talked of, and when New England railroads actually took on heavy stocks some of the smaller corporations also made the effort to get under cover. Contract demand improved, and late in October there had been enough newspaper comment on slow car movement and the possibility of labor shortage to make New England consumers actively interested. There were many, too, who found business prospects so much better they sought to increase their contracts, and both all-rail and at-tidewater orders accumulated faster than cars or boats. The long-awaited turn came; and December saw not only the makings of the worst railroad congestion yet known, but the highest coastwise freights that have prevailed in a generation.

OFFSHORE TRADE A FACTOR

No small feature was the fairly consistent demand for export throughout the year. Although not always supporting the \$2.85 basis announced early in the spring, buying abroad and in South America was the main prop to an otherwise weak f.o.b. market. At the same time foreign inquiry came nowhere near the rosy expectations that were entertained the year previous, and prices averaged very little above the level of 1914.

The great scarcity of suitable carriers has been a continuing obstacle, and then it appears that South Americans when called upon to pay extreme prices are more fussy about screening, preparation and analysis than was looked for. Baltimore and Philadelphia have shared with Hampton Roads an increase in loading for export, but the increase has not been enough to make up the loss in the bunkering tonnage normally furnished at New York and now in such large part wiped out by war conditions. In the aggregate, thus far, the war has diminished and not increased shipments offshore.

The fact, however, that Hampton Roads, Philadelphia and Baltimore increased their exports has been distinctly favorable to prices in the coastwise market, for those ports rather than New York have always been the more susceptible to the overaccumulations that affect New England.

The British embargo in July against exports of British coal to any but British possessions and protectorates, withdrawing more than 42,000,000 tons annually from the world's markets, was counted on to increase American consignments, and undoubtedly it did to a measurable extent. Italy, for instance, took 1,250,000 tons during the 11

months ending May, 1915, a very large increase over the year previous, and beginning in the fall a regular service of two 7,000-ton ships was established between Baltimore and Alexandria, Egypt. But when it is realized that the normal export tonnage of the United States amounts to only a third of what Great Britain embargoed from her own ports, it is plain that our facilities must increase considerably before we can handle what the world would consider a comprehensive tonnage.

Even with present conditions a small export business distributed through the year can do a lot to save the tidewater market from being demoralized, and that in a word was what the offshore trade accomplished in the year just ended.

Like a fillip came the reaction from the long dullness of January to October. Rough weather at sea caused coal to accumulate at the loading piers, and what at first seemed a temporary suspension of shipments developed into a real shortage of bottoms for the normal requirements of late season trade. Usually, in cases of embarrassment with either, all-rail delivery and water shipment can supplement each other, but not so in the "pinch" of 1915.

The hard times had given the Eastern railroads poor preparation for the traffic thrust upon them early in the fall, and by December car supply had been reduced to from 35% to 40% of normal in most of the Pennsylvania districts. The coal roads which serve New England all-rail were in poor position to make good the deficiency in coastwise shipping, and 1915 went out with New England spot prices well grounded on a panic basis.

POCAHONTAS AND NEW RIVER

As largest shippers on the seaboard the Hampton Roads agencies took their customary lead on prices the first of the year. Buyers were asked \$2.85 f.o.b., but everybody knew the spot basis to be \$2.70 (\$1.30 at the mine gross) or less and that it would require careful handling to avoid a badly depressed market for Pocahontas and New River. About all the season business that could be closed at an advance over 1914 was taken early under pressure of high coastwise freights and most of it in the same channels as in 1913 and 1914. Other buyers chose to wait developments; many of them waiting until well into the fall were able to buy at less, if anything, than in the spring. The Boston Elevated Ry. was among the large corporations that bought in the spring, but at 5c. less than the year previous (No. 528, Vol. 7, pp. 666, 710). As usual practically all the contracts were subject to correction in case water freights or f.o.b. prices declined. By March, therefore, the year was pretty well committed to a dull and sluggish market, and it was realized something acute would have to happen before prices would be firm at \$2.85.

The contract season in New England really divided itself into two parts. There was the January-February period when contracts generally were on a higher basis than the year before, and the period from March to November when freights had sagged to a normal basis of 75c. to 80c. and contracts were either on the same basis as 1914 or 5c. to 10c. less. On business closed the first period, current freights were discounted quite liberally, so, "protection clause" considered, there was really only a small margin between contracts early and those entered into late in the season.

The award of the Panama R.R. contract in November, 1914 (No. 14, Vol. 6, pp. 814, 854), on a \$2.70 basis really set the pace for practically the whole of 1915, although such contracts as those for the navy yards at Portsmouth, N. H., and Charlestown, Mass., clearly indicated prices weak and wavering as the season progressed. It seemed there was greater effort to sell and correspondingly more diffidence on the part of buyers. Occasional deep cuts to free cars betrayed even less resolution on the part of operators to get their price or keep coal in the ground than was the case in 1914. The reaching out for tonnage was very evident, and the bulk of the year's ordinary contract business was placed before May and at prices lower than the year previous.

A firmer attitude toward long-term contracts was noticeable in the spring. Opportunities to quote for two to three years were passed over, and even on yearly contracts for large tonnages there was temporarily a disposition to adhere more closely to a remunerative price. May prices were steadier than for several months and contract demand was slightly better, but there was still a large number of consumers with ample storage who were holding shippers down to "monthly proportions." Wholesalers even then talked the possibilities for winter, but for the most part predictions fell on deaf ears. Demand slackened again when price concessions were withdrawn, and those buyers who had begun to show interest-dropped back into watchful waiting. Export inquiry got spasmodic on account of the shortage of steamers.

Such were conditions when the Navy Department awarded 400,000 tons to one of the Pocahontas shippers at \$2.60 f.o.b. Norfolk (No. 664, Vol. 7, pp. 836, 953, 954, 1006, 1087). That this contract should be taken at 10c. less than the Panama R.R. supply six months before, together with the fact that \$2.60 was the successful bid on a Cambria County coal at Philadelphia on the same business in 1914, seemed to show a determination on the part of West Virginia operators not to be left out of Government business. It also served to strengthen the feeling among buyers that Hampton Roads shippers were not quite so sanguine of a broad export market.

THE TURN IN POCAHONTAS AND NEW RIVER

Certainly there was enough rivalry over the few orders that came into the market the next 60 or 90 days, and such sales as reported confirmed the rumors of a \$2.60 level. Output was again too heavy for the market to absorb, and at one time in June the Virginia railroads were compelled to take drastic measures against shippers who failed to release cars. The pressure removed, the market got somewhat firmer, although nothing like a horizontal price basis prevailed until the last of the year. Some of the shippers were put to it to move coal, and only those with favorable connections offshore were in position to hold aloof. Throughout the year there was record dispatch at all the Virginia piers.

An abundant supply of water enabled many industrial plants to go light on coal during the summer months and contributed its share to the general dullness. In August was the apex, the time when buyers could secure the most liberal inducements from nearly all the agencies. Coastwise trade was then almost at a standstill, New England contributing rather lightly compared with the business then being done in other directions by most of the factors at Hampton Roads.

By September Pocahontas and New River were again more firmly held, particularly on futures. The Boston & Maine R.R. sought tenders for 720,000 tons a year for one-year and five-year terms, either f.o.b. loading port or delivered alongside Mystic Wharf, Boston, deliveries to begin on the expiration of present contracts in August, 1916, and in April, 1917 (No. 1313, Vol. 8, pp. 367, 576). It is understood no award was made. The largest part of this tonnage is now furnished via Norfolk from the Clinch Valley region, and the trade was keen to see what might be the outcome, but apparently no shipper cared to undertake business of that size so far ahead at any price that would be considered. To that extent the incident tended to show the increasing strength of the market.

One more large order, however, had to be taken at a low price before \$2.80 to \$2.85 could be called the basis for the remainder of the year. The Panama Railroad Co. again profited by the situation, buying 400,000 of the 500,000 tons required, at \$2.60 (Pocahontas) f.o.b. Norfolk, 10c. less than in November, 1914 (No. 1327, Vol. 8, pp. 367, 446, 531). Cambria coal f.o.b. Philadelphia was offered at the same figure, or 8c. less than the year previous. In view of flurry possibilities the Hampton Roads bids would have caused surprise had there not been the expectation that most of the fall demand would come from abroad and that those agencies credited with heavy tonnages offshore, either would quote considerably higher or not bid at all.

The Hampton Roads market from that time out gave reassuring signs so far as price was concerned. Demand, however, was erratic, and not even in December, when New England all-rail and delivered prices were mounting from one new height to another, was there any snap to the f.o.b. market at Norfolk and Newport News. Throughout there was a large volume of coal standing at the piers, and for all the signs to be observed there, the tie-up in New England might as well have been in another world.

While in 1915 Pocahontas and New River in net returns were again sacrificed to overproduction, the biggest single factor in keeping tonnage down was the shortage of ocean carriers throughout the year and the marked shortage of coastwise boats during November and December. The year ended with \$2.85 perhaps more consistently maintained than at any time since 1913.

INLAND DISTRIBUTION

Stating it broadly, prices on cars at Boston and other distributing points were as weak and uneven as the market at Hampton Roads. Early in the year there was a re-alignment of certain of the New River agencies, but at that time it was not expected there would be any marked change in handling the volume of coal that goes inland to mill centers like Lowell and Lawrence via Mystic Wharf, Boston. The year opened with Pocahontas and New River quoted at \$3.63 to \$3.78, the latter being based on \$2.85 plus 70c. water freight and being the same price at which many of the 1914 contracts had been placed. In February the larger distributors announced \$3.90 as the new contract figure, although it was observed that 5c. less was named to the closer buyers. This showed a willingness to discount current water freights that again came into prominence later in the year. Gradually prices slacked off, until in May, when "market cargoes" put in appearance, even the best grades were

an easy purchase at \$3.50, a net return of something like \$2.50 f.o.b. Norfolk. Throughout the season coal was more plentiful than orders.

Minimum prices continued, and in summer it was apparent an even keener rivalry was in prospect for 1917 business. The interests owning rehandling plants were credited with keeping prices low in order to discourage competition from those obliged to use railroad facilities with their upset charges for discharging and weighing. Many of the low figures attributed to the menace of "market cargoes" were actually made by factors anxious to dress the Mystic Wharf market as unattractively as possible! That was the state of trade inland when the flurry began early in November.

PRICE WARFARE ON 1916-17 BUSINESS

In September when on-car quotations were at as low a level as at any time during the year there developed a situation which in its bearing on the steam trade in New England was as interesting as it was novel. One of the Boston factors, understood to represent certain New River interests, issued a statement to the trade in which plans were outlined for the use of two steamers, one of 12,600 and the other of 9,000 tons, and of a modern rehandling plant on property adjoining Mystic Wharf, both of which would put this firm on a competitive basis with the largest and most aggressive distributors. With this in view the low rate of 75c. was named to cover water freight, marine insurance, discharging, weighing and forwarding for delivery inland, Apr. 1, 1916, to Apr. 1, 1917, and naturally this led to marked developments. The offer was closely followed by others from competing distributors. From simply a low rehandling charge that meant \$3.60 on cars Boston if the Hampton Roads base figure continued at \$2.85, quotations slid eventually to \$3.30.

It was a novel situation—prices for shipments prior to Apr. 1 beginning to get firm, and deliveries for a year thereafter as low as any season quotation in years and with "protection" against further decline! Something like 1,250,000 tons was covered for the next contract year before the sensational advance in water freights called a halt to such reckless mortgaging of the future. The footless part of it lies in the fact that very largely the tonnage was closed in the usual channels; that is, shippers holding the business the current season have met competitors' prices for next season. There were of course instances of large orders being bid away by aggressive factors, but there were cases of reprisal in plenty, and the sum of it is that consumers alone profit by the episode. It was an unwholesome scramble for tonnage and augured poorly for operating returns in 1916.

This "soft spot" it was expected would be confined strictly to "on cars Boston" and to points where other distributing ports like Portsmouth, Providence, etc., compete with Boston; but early in November the same trend was disclosed alongside wharves of dealers and consumers—first those accessible by lighter from Boston and still later points accessible to steamers and barges. The end of 1915 found practically all the large contract business, outside of railroads, closed for the year ending Apr. 1, 1917, at prices 20c. to 40c. less than in 1914 or 1915, both admittedly off years, and this in face of as disturbed a season as the trade has experienced since 1902!

The coastwise trade has become so involved with the use of large steamers dependent on quick dispatch at both ends and not so much dependent on weather that doubtless there will be an increasing tendency to as long term contracts as operators see fit to countenance. The old contract season, April to April, is less and less respected as conditions change.

GEORGES CREEK COALS

The trend in New England toward reduced receipts of Georges Creek was very noticeable in 1915. Early in the spring the largest shippers of that grade made particular effort to enlarge the outlet for their Somerset County coals, apparently recognizing that the heaviest market for Georges Creek lies in other directions. The usual consistent attitude was maintained throughout, however, and there were no "soft spots" in Georges Creek so far as concerned current quotations.

Prices on this grade are so generally covered by contract, both f.o.b. and alongside, that quotations rarely vary. That was the rule in 1915 until in November small tonnages were sold at \$2 at the mine. The situation developed so fast, however, that in a very few days new business was being declined in every direction.

The year opened with the shippers gradually making good their arrears of shipment in December, 1914. Deliveries in anthracite bottoms from Philadelphia helped out along the coast. A normal output was taken care of very comfortably, and when the contract season was under way the Georges Creek interests were found conservative on delivered prices. The f.o.b. basis was announced in January—\$1.67 at the mines and \$2.85 at Baltimore, the same as for two years previous; but for several weeks a waiting policy was pursued with regard to tidewater contracts, especially those for comprehensive tonnages.

Along with the important agencies at Hampton Roads, the Georges Creek shippers watched the situation on water freights until in March, and then under the pressure of accumulated coal they entered the market on a competitive basis. There is a large trade that is partial to this coal, and while a considerable tonnage was lost to shippers of other coals who had been willing to name delivered prices the first of the year, Georges Creek in the spring was very nearly as strong a factor as usual. Curtailment was enforced as coal piled up at the piers, but export orders came to the relief the latter part of April.

ORDERS FROM ITALY

In May the Italian Railways had placed a large order, and in common with Fairmonts and Somersets, Georges Creek began to be routed almost exclusively to Baltimore, where foreign bottoms were arriving faster than they could be loaded. Several Georges Creek barges were diverted to load Pocahontas and New River, and it was apparent the tonnage coastwise must be further reduced. This grade has some of the qualities that make Cardiff coals so favorably regarded offshore, and it was only natural its shippers should be pioneers in the Mediterranean and in South America. In 1915 they were getting results both from efforts in previous years and in certain cases from their new financial association with interests allied to the Standard Oil Co., a corporation certainly well established in foreign markets.

There were long periods the first half-year when very little Georges Creek was available at Philadelphia or New York for coastwise orders, and consumers and dealers were obliged to be more than usually forehanded. In July it was apparent that quite a tonnage had been relinquished to the higher grades from Pennsylvania, and when the export business had relaxed somewhat an occasional free cargo proved hard to sell. Shipments on contract now came through with accustomed regularity and continued to do so to the end of the year. All-rail deliveries began slowing up with the car congestion.

The Georges Creek agents found themselves drawn into the competition for 1916-1917 contracts at an early stage. Most of their tonnage they retained, but at prices well down to the Pocahontas and New River level for the same business. A large tonnage was closed within a week, and more than a few consumers have bought their supplies of Georges Creek for the year from next April at lower prices than has been the case for several years.

F.o.b. Philadelphia the season price was \$2.92 to \$3.02 and \$3.22 to \$3.32 f.o.b. New York. In December a small volume of coal was sold at higher prices for spot delivery, but the shippers had relatively little free coal at their disposal.

THE PENNSYLVANIA GRADES

The absence of any serious break in Virginia coals allowed bituminous from Pennsylvania to struggle along on minimum prices for most of the year. Water freights in January were so high that Pennsylvania interests were encouraged to look for a much broader outlet all-rail, but freights sagged off and Pocahontas and New River receded in price.

All hope of higher prices than those prevailing in 1914 vanished before the contract season was well under way. Factors in the quality grades actively canvassed New England the first half-year and they did increase their tonnage, but not so largely as would have been the case had the Southern coals been firmly held at \$2.85. As it was, the confidence of many new buyers was gained, and unless everything goes to smash this winter on all-rail movement, the Pennsylvania operators can hardly fail to make further gains in 1916.

In the spring the mining restriction was still effective and the outlook very hopeful. The better grades were represented in every open competition, and quite an amount came forward for testing purposes. Several large corporations that were anxious to keep aloof from the Southern coal market bought Pennsylvania coals, while they were tempering prices. The result is that an increasing number of good Cambrias and Somersets are on the accepted lists and will hereafter be considered if price is favorable. When the market level had opened at 90c. to \$1.50 for Clearfields and \$1.15 to \$1.65 for Cambrias in January, the higher prices had eased off to \$1.40 and \$1.60 in March and April.

Through the summer months these coals had their full share of dullness. When shippers could, they renewed the previous year's contracts, but the trade was listless. Most operators were under strict curtailment, and few would take the risk of demurrage at loading ports. Small concessions were made where it was thought they could turn the scale, 5c. to 10c. less than in 1914 being the rule on quantity orders.

Anthracite in New England

SYNOPSIS—Opening period of the year disappointing, mild weather causing a reduction of 200,000 in the tonnage. Heavy shipments of April coal in March. Delayed shipments and high vessel rates created a shortage and an active market at the year end.

Until fall, 1915 could have been emphasized as a notably easy year in which to get anthracite forward at minimum prices. Since late October, however, the pressure has been on the companies to ship and not on the dealers to buy. If only the market could have absorbed a larger output in July and August, there would not have been the shortages along the coast that began to prevail during December. The hard-coal industry is well in hand so far as concerns prices, but there is still an opening for some genius to devise ways of distributing output with less unevenness through the year.

The winter of 1914-15 was very disappointing. Most dealers figured the mild weather made a difference of 10 per cent. in their tonnage for 1915, and undoubtedly it did account for much of the 200,000 tons that Boston was behind Dec. 1, as compared with the year before. There were small spurts in February, but by Mar. 1 dealers were much more concerned about working down stocks for Apr. 1 than about purchases. In fact the spring shipping season was on top of them long before Apr. 1. Several of the companies began loading early in March, withholding invoices until the April reduction was effective. A larger proportion of April coal was received in New England in March than in any previous year. Shipments were very heavy and came forward with such a rush they promised to be all over in a few weeks. But May receipts were larger than in April, and June and July, while light months, proved to be unusually good.

Stocks, therefore, were at their maximum Aug. 1. Buyers had been able to get what sizes they required, there was little restriction even on the proportion of stove and the market settled down for a long period of dullness that was sure to last until coal moved in better volume to the consumer. Mining was curtailed, usually to three days a week; and although there was some complaint, it was realized that the operators were simply narrowing the output to the current needs of the market.

IMPROVEMENT TOWARD THE YEAR END

It was not until the demands of the mine workers had been published that retailers began to consider possibilities for April, 1916. A few were quite strong in their disposition to take coal on in the fall as fast as storage could be found, and those who held to that attitude were certainly gainers at the end of December. There was no snap, however, to the trade until October. September was poorer than usual for retail trade, and a protracted fog delayed the movement of barges. As a result both wholesale and retail trade began to get behind on deliveries. In October there was some delay coastwise, but the succession of storms in November approached the climax.

The end of the year saw a very active market, but with buyers dependent on fewer shippers than usual. Current

water freights from New York soon became too high to induce much speculation on the part of individual shippers, and one of the companies that always did a flourishing business along the New England coast parted company with a barge line and is no longer to be looked to for the usual prices alongside. The volume of bituminous being shipped in what is naturally regarded as anthracite tonnage also had the effect of curtailing receipts of anthracite, particularly from Philadelphia. Tows moved with extreme slowness in December, storms and gales succeeding at short intervals, the companies got farther and farther in arrears on shipments and the situation was rapidly becoming acute. If many dealers had not been forehanded, there would have been more than a few cases of distress.

UNSETTLING INFLUENCES

In August the anthracite-rate decision by the Interstate Commerce Commission caused some discussion, but it was generally felt in New England that if rail rates were reduced they would probably be offset on a very large percentage of the output by like increases on the part of coal-mining companies. The decision was therefore robbed of most of its beneficial aspects. What the trade wants is some permanent settlement of anthracite controversies.

The ruling in October by the Supreme Court of Pennsylvania unfavorable to the state tax was also a subject of interest in New England. Should the sums paid since July 1, 1913, be actually refunded and eventually find their way to dealers along the coast, the aggregate would be a tidy sum. There is likely to be more than one summer, however, before the money is actually handed over.

The movement to readjust anthracite sizes is another subject that cropped out in 1915. Sizes like stove and broken have been in such demand in some seasons that orders went unfilled. All interests would likely be benefited if, as proposed, the number of sizes could be reduced to four. The trade will welcome further developments.

Wholesale prices on anthracite delivered alongside Boston were the same as in 1914, based on \$5.75 as the net September circular per ton of 2,240 lb. for stove and egg, plus the Pennsylvania state tax. Some shippers added a flat 10c. to the price on all domestic sizes, and others have charged the exact amount of the tax they pay.

Boston retail prices were advanced in January, 1915, to \$8 for stove, \$7.75 for egg and \$8.25 for chestnut, evening up with the previous year. A 75c. reduction was announced Apr. 1 on all sizes and was followed by three 25c. advances, one in July, one in August and the other in December, making prices at the end of December 25c. higher than the previous year.

✱

Increase in Circular—In issuing its new circular for January, the Philadelphia & Reading Coal and Iron Co. increased the prices of prepared sizes 10c. per ton and the steam sizes 5c. per ton. The company also issued a special statement that the tax would no longer be collected from the purchasers of coal, which read as follows: "The addition to the price of coal of the amount of the Pennsylvania state tax of 2½ per cent. on anthracite coal imposed by the act of June 1, 1915, will be discontinued by this company, as the decision rendered by the Supreme Court of Pennsylvania in passing on the act of June 27, 1913, makes the validity of the later act now in force doubtful."

Progress in the Export Trade

By J. S. BURROWS*

SYNOPSIS—The theoretical export movement for the year shows a substantial decline, though this is due to the heavy falling off to contiguous countries, such as Canada and Mexico. Gratifying increases are recorded in all the really competitive markets of the world, and American shippers have had opportunities in entirely new fields. Paucity of vessel tonnage prevented a more rapid expansion.

When a complete statistical review of the export trade for 1915 is available, the figures will no doubt prove a disappointment to the many whose attention has been attracted to this branch of the coal trade since the beginning of the European War. Estimates based on the customs returns for the first 9 months of 1915, shown in Table 1, would indicate that our total exports of bituminous coal for the year will not exceed 16,000,000 tons, with anthracite approximating 3,500,000 tons, making a total of something less than 20,000,000 tons, or about 2,000,000 tons less than 1913, which was the record year.

With these exceptions the foreign markets to which American coal is shipped may be termed competitive territory, and rather substantial gains have been made in these during the year just closed. While the tonnage shipped does not bulk large when Canada and Panama are omitted, creditable gains have been made, particularly in South America.

The European market has been entered at many points with trial cargoes of various classes of coal, and a few contracts have been closed there for substantial tonnages. The Italian Government closed large contracts with us a few months before entering the war and has established a purchasing engineer with testing laboratory in New York, all details of inspection, shipment and transportation being taken care of by that bureau. Pocahontas coal, supplied from Hampton Roads, is used for the state railways.

As will be seen from the accompanying tables, Italy appears as the largest foreign customer for American coal, and it now seems that we may retain this business indefinitely.

TABLE 1. EXPORTS OF COAL, 1915

Bituminous										
To	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Total for 9 Mos.
Italy.....			72,371	253,273	285,027	383,019	502,750	382,154	324,925	2,348,870
Canada.....	354,210	302,594	273,395	381,223	589,512	873,239	1,016,413	947,069	944,800	5,082,455
Panama.....	28,069	26,578	47,600	42,946	34,321	47,708	52,805	49,423	59,969	389,419
Mexico.....	44,128	18,916	34,899	32,966	30,247	22,445	14,138	18,507	21,787	238,033
Cuba.....	59,197	75,646	110,585	101,013	107,650	74,984	91,162	114,299	109,269	843,805
Other West Indies and Bermuda.....	13,797	24,007	46,563	55,055	34,471	48,406	43,959	42,347	44,835	353,440
Argentina.....	7,259	32,974	33,404	79,531	108,730	157,831	114,162	128,823	56,305	719,019
Brazil.....	19,375	28,705	42,827	66,582	65,183	122,484	84,813	53,002	61,223	544,194
Uruguay.....			10,273	36,503	14,401	11,968	26,689	30,956	4,275	135,065
Other countries.....	107,110	75,468	20,937	63,576	134,735	191,326	279,602	234,268	205,589	1,167,260
Total, 1915.....	633,145	584,888	692,854	1,112,668	1,404,277	1,933,410	2,226,493	2,000,848	1,832,977	12,421,560
Corresponding period, 1914.....	923,760	766,309	1,018,612	772,037	1,083,813	1,185,566	1,339,987	1,955,176	1,857,520	10,902,780
Anthracite										
To	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Total for 9 Mos.
Canada.....	188,781	176,966	125,114	445,118	412,479	352,234	267,712	293,318	276,583	2,538,305
Other countries.....	1,518	1,274	2,081	8,409	10,215	402	5,494	13,829	13,207	56,449
Total, 1915.....	190,299	178,240	127,195	453,527	422,694	352,636	273,206	307,147	289,790	2,594,754
Corresponding period, 1914.....	197,415	206,813	163,431	395,627	475,483	433,265	338,997	455,305	395,088	3,062,057

These estimates, however, do not reveal the true state of our export business as regards trade growth, for the reason that two of our largest foreign buyers are practically home markets. These are Canada and Panama. Canada takes nearly all of our anthracite exports and from 70 to 80 per cent. of our bituminous exports.

INCREASE IN EUROPEAN BUSINESS

General business conditions in Canada, therefore, have a marked effect on our coal exports, and since the beginning of the European War and up to quite recently, Canada has suffered from a business depression that reduced her demand for American coal 25 to 30 per cent. Coal for Panama is practically all bought by the United States Government for use in the Canal Zone, the large quantity formerly used in construction work now being nearly equaled by the amount sent there for the use of ships coaling at the canal terminals. The markets of Cuba and the West Indies passed to our control years ago and have for some time been considered part of our natural home trade.

Table 2 gives an estimate of important shipments to European countries during 1915:

TABLE 2. ESTIMATED EXPORTS TO EUROPE, 1915 (GROSS TONS)			
Italy.....	3,000,000	Norway.....	60,000
Sweden.....	250,000	Portugal.....	30,000
France.....	225,000	Holland.....	30,000
Spain.....	200,000	Gibraltar.....	25,000
Egypt.....	150,000	Morocco.....	10,000
Greece.....	75,000		
Total.....	4,055,000		

While these figures are only estimates in round numbers, they are sufficiently close to show that our European business is about four times what it was before the war.

Before the European War our shipments to South America had reached a total of about 600,000 tons annually, the growth of trade there before the opening of the canal being rather slow. During 1915 our estimated exports to South American countries were as follows, in gross tons:

Argentina.....	775,000	Venezuela.....	15,000
Brazil.....	625,000	Peru.....	12,000
Uruguay.....	150,000	Others.....	25,000
Chile.....	60,000		
Total.....	1,662,000		

These figures show that shipments have more than doubled during the past year, and this in the face of de-

*Fuel expert, Castner, Curran & Bullitt, Norfolk, Va.

pressed financial conditions and a shortage of vessels. Taking South America as a whole, we have probably obtained only about 15 to 20 per cent. of the available business, when we should have nearly all of it. Our failure to capture more has been owing to the continued activity of England on the East Coast and Australia on the West.

Contrary to expectations Great Britain has continued throughout the war to hold onto a large share of her South American business as well as much of her export trade to other neutral countries. While the output of British coal has been gradually declining and temporary embargoes on exports have been established on several occasions, there has been more coal available for export at nominal prices than could be transported.

THE SCARCITY OF SHIPPING FACILITIES

The vessel situation, as everyone knows, has been the main feature of the export trade during 1915, and the shortage of steamers which has been felt so acutely in this country has also had its effect in England and elsewhere. Ocean freights have advanced to an extraordinarily high level during the year, particularly in the last three months, when vessel rates have reached such a point as to make the business practically prohibitive.

For this reason the last quarter of the year will not show the same gain in exports as the earlier periods. The late spring and summer saw the most active export trade, with July leading as the biggest month of the year. Owing to increased interest in the offshore business and the weakness of the domestic market, there has been at all times a surplus of coal at the loading ports, with prices rather low, but in the main steady throughout the year. Nearly all business has been done on a basis of f.o.b. loading port, in many cases cash against documents being demanded.

Practically all of our export coal is shipped from Hampton Roads (Lamberts Point, Sewall Point and Newport News), Baltimore and Philadelphia. The figures by months covering shipments from January to November, 1915, are given in Table 3.

TABLE 3. COAL DUMPED AT PRINCIPAL LOADING PORTS FOR EXPORT

Month	Hampton Roads	Baltimore	Philadelphia	Total
January.....	117,607	89,779	40,648	248,034
February.....	150,417	79,029	32,794	262,240
March.....	262,687	76,888	48,646	339,575
April.....	444,239	193,293	60,207	697,739
May.....	445,917	232,866	107,645	786,428
June.....	608,599	305,917	122,379	1,036,895
July.....	712,955	258,585	167,321	1,138,861
August.....	628,995	210,700	154,965	994,720
September.....	603,558	200,926	64,351	868,835
October.....	441,643	139,562	87,775	669,070
November.....	334,643	55,343	73,000	462,606
Total, 11 months.....	7,493,626	1,842,888	959,731	9,875,914

In addition to these ports New York, New Orleans and Mobile ship a few thousand tons per month. Charleston has recently become a factor in the export trade through the completion of the new coal piers of the Southern Ry. This dock, which was finished late in the year, will be used for the shipment of southwest Virginia and southeast Kentucky coals, some of which have been handled in the past over the Lamberts Point piers at Norfolk.

ACTIVITY IN SHIPBUILDING

A peculiar feature of the export situation has been its effect on trade conditions in New England. Ordinarily New England is mainly supplied with coal from Hampton Roads, Baltimore and Philadelphia by a fleet of

steamers, schooners and barges regularly engaged in this trade. Since the beginning of the war and particularly throughout 1915 these vessels have been withdrawing from this trade and engaging in offshore traffic, with the result that coastwise freights have advanced from around 70c. to nearly \$3, and the actual scarcity of bottoms for New England shipments has caused many consumers in that territory to cover their winter requirements with all-rail coal from Pennsylvania. Consequently, as the year closes, central Pennsylvania mines with all-rail connections to New England are deriving the full benefit of the vessel shortage. As the greatest problem of the export trade has been lack of transportation, it is of especial interest to note here that at no time in the history of the United States have American shipyards been as active as during 1915. There are either under contract or in process of construction 98 merchant vessels of more than 3,000 tons each. Of these vessels 11 are colliers. Of the 98, 13 are of more than 10,000 tons each, 20 are between 7,000 tons and 10,000 tons and 36 are from 5,000 to 7,000 tons each.

The colliers are being built by the larger coal companies and their affiliated interests, and many of them will be put into service during the early part of 1916. With these additions to our regular coal-carrying fleet the transportation situation will be improved, but with the continuance of the European War there will no doubt be a greater demand for all classes of American goods and a continued shortage of vessels, so that the year 1916 will in all probability not differ greatly in the export trade from the one just closed.

Situation at Hampton Roads During 1915

The movement of coal from Hampton Roads ports during the year 1915 has broken all previous records, and so far as can be seen at this time the total dumpings will run close to 15,000,000 tons, for up to Dec. 1 they had amounted in round figures to 13,600,000 tons.

Of the export coal moving, Italy took the largest amount going to any one country. This movement showed up well all during the spring and summer although it has fallen down somewhat during the latter part of the year. The coal for Italy has been to a large extent contract business and has been for the Italian government for use of both the railways and navy. A considerable amount of the coal going to Italy has been converted into briquettes after its arrival there and then has been used by the railways and other government enterprises requiring the briquette form of fuel. The exportation of coal to Italy would have been considerably heavier but for the scarcity of vessel tonnage and the consequent high freight rate. Freight rates on coal have reached, perhaps, the highest figure ever known and indications, at this time, are that they will continue high for some time to come.

Export shipments to South American countries have not shown up as well as was anticipated, although they have moved in greater volume than ever before from this port. Brazil has taken, no doubt, the largest portion of the coal moving from Hampton Roads ports with fair quantities to Argentina, Chile and a few scattered cargoes to the various other countries. Freight rates for steam tonnage being high, quite a large fleet of schooners has been employed in this South American business, where,

until the present war commenced, practically nothing but steam tonnage was employed. Schooner tonnage in addition to taking coal to South American ports has also been employed in the European trade loading cargoes for Spain, Portugal and even African ports. Freight rates for Spain in one instance were as high as \$10.50 per ton, this being for a cargo to Barcelona.

Records have been made by the various railroads for fast loading, fast movement from mines and enormous dumpings compared with former years. It was hoped at the beginning of the year that the Norfolk & Western piers would be able to reach as high a figure as one million tons, and while their dumpings have been each month about as much as the combined figures of the other roads, they have been unable to reach the million-ton mark.

COAL PRICES

Prices on export and coastwise cargoes for standard New River and Pocahontas coals have ranged from \$2.65 to \$2.90. The prevailing bunker rate, that is contract business, has been \$3.30 per ton all year, although this may have been cut in a number of cases on spot business and on American time-chartered boats. The demand for high volatile coals has been somewhat light and in consequence the prices have been somewhat low, ranging from \$2.30 to \$2.75, this latter price, however, only being quoted when the demand was heavy in the West.

Of the bunker vessels taken care of during the year the most noted were the German auxiliary cruisers "Kronprinz Wilhelm" and the "Prinz Eitel Friedrich," which were supplied at Newport News. Other foreign war vessels supplied were a Dutch and an Argentine battleship.

There was considerable discussion and dissatisfaction on the part of shippers when the railroads here took up the question of changing the present freight rates and also making a change in the charge for docking, undocking and trimming for 1916. After several conferences on the part of the railroad officials it was decided that the freight rates remain as they are at present, that is, \$1.40 per ton for both cargo and bunker, with a terminal charge of \$30 per steamer on bunker vessels. The docking and undocking on bunker vessels, however, has been changed to a new basis of 1c. per net registered ton. This 1c. per ton to cover both docking and undocking will be the 1916 rate. While it has not been definitely decided at this time whether the shippers will absorb this docking and undocking in the price of the coal, it is believed they will and that the 1916 bunker price will be the same as 1915; that is, \$3.30 per ton plus trimming charge of 10c. per ton.

While it is impossible to figure at this time what 1916 will bring forth, it is predicted by those well informed that Hampton Roads coal shippers will have an opportunity to make Hampton Roads the coal center of the world and control practically all of the foreign markets now taking Welsh and other coals.

✽

Effect of Statutory Safety Requirements—In a suit against a coal company for injury to an employee, caused by an unguarded revolving setscrew on a shaft, it was decided that the Missouri statute which requires certain dangerous machinery to be safeguarded does not exempt employees from their duty to use reasonable care to avoid injury from unguarded machinery nor deprive an employer of the defense of contributory negligence in such a suit. (United States Circuit Court of Appeals, Eighth Circuit; Hughes vs. Northern Central Coal Co., 224 Federal Reporter, 57.)

Coal Trade at Cleveland

One year ago a good part of the Ohio coal-mining districts were involved in labor trouble. The shipments were almost negligible. The law made mine-run mining necessary, and although an amendment to the Green screen-coal law was passed by the legislature, no success resulted from efforts of the operators to swing the miners into line on a lump-coal mining contract. After 13 months of continued idleness eastern Ohio mines were opened, and mining operations were resumed about June 1.

The trouble in eastern Ohio was closely followed by efforts on the part of Ohio operators to bring about an adjustment of rates between the eastern Ohio and Hocking districts and the Lakes and all-rail points in northern Ohio. The Hocking success in obtaining a reduction of the rate to Toledo from \$1 to 85c. left the eastern Ohio operators with a separate fight on their hands. This was considered probable, as the eastern Ohio operators fought their battle with the miners alone and have for two years played almost a lone hand in all other matters.

They have been negotiating with the railroads for a reduction of the rate to the Lakes (now 90c), and they have at least gained enough ground to base hope upon. It is believed that the rate from eastern Ohio to the Lakes will be materially reduced, although the case is likely to end in a trial before the Ohio State Utilities Commission. The lower freight rate is deemed essential to preserve the mining industry of eastern Ohio against the competition of West Virginia, which enjoys natural advantages denied Ohio mine operators and which has a lower proportionate freight rate to the Lakes.

PRICES OF COAL DURING THE YEAR

Selling prices of coal were lower last year than in 1914. The local market has generally ruled lower in sympathy with other markets, and the Lake trade obtained concessions in the spring of from 10c. to 25c. a ton as compared with the spring of 1914. Prices in 1914 were also lower than in 1913, but were not demoralized as at the opening of the Lake coal season this year. The winter of 1914-15 saw a large tonnage carried over on the upper Lake docks, and it was not necessary to ship as much coal up the Lakes to supply the trade during the winter of 1915-16 as during the preceding season.

As a result of this condition, hard coal was the one product of the mines that showed any improvement. Anthracite operators took no chances of being short in 1916-17 because of the possibility of a late start in the traffic of 1916 on the Lakes on account of a strike. Shipments were even larger than in 1914. Bituminous coal operators did not ship as heavily, and the stocks at the close of navigation were considered ample for all needs. The receipts at Duluth-Superior are typical of all Lake ports except Canadian. Receipts of both bituminous and anthracite to Dec. 1 aggregated 9,700,000 tons, as compared with 9,488,297 tons in 1914. The gain was entirely in hard coal.

The Canadian railroads carried over large tonnages, and in the Northwest the railroads are the principal consumers. They took coal all season, but fell short of a normal business.

Conditions indicate a material improvement in 1916 over 1915, not only in local, but also in Lake trade.

Ocean Shipping Conditions

SYNOPSIS—The heavy loss in vessel tonnage due to the war prevented what would have otherwise been an epoch-making period in the export trade. Ocean freights of all kinds advanced to unprecedented figures, and prospective American exporters have studied this phase of the international coal markets more than ever before.

The European War has upset all calculations on marine freights, and the year just closed showed the widest range of coastwise rates in a generation. The fact is there is a world-wide shortage of ocean carriers, but it took five months for it to cause any advance in rates on the Atlantic seaboard.

In the latter half of 1914 the bituminous trade was so depressed that charters of several steamers oversea did not greatly hamper the coastwise trade. Even when the number increased and sailing vessels began to be chartered to Europe as well as to South America, their absence was hardly felt. Prolonged bad weather, however, caused an advance from 65 and 70c. to \$1 and \$1.10, the latter being paid before the end of January, Hampton Roads to Boston. It was difficult to secure options even for a single trip, so excited were transportation owners over inquiries for offshore tonnage. To Buenos Aires \$10 was paid, and it followed that coastwise freights must rule higher than in 1914.

The coal market could not then justify any further advance, enough carriers were found for the business offering and it was disclosed that there was a certain amount even of steam tonnage open to coastwise charters that was not available oversea. Still later it developed, the gullness of coal considered, that supply and demand were so nicely balanced that schooners, barges and steamers were easy at rates down to 70c. after the contract season had been entered upon.

It was observed at the time that there was still enough tonnage left on the coast to move a very modest volume of bituminous to New England during the 1915 season, and that was precisely the situation. The Boston market alone, away behind 1914 in tonnage, accounted for so small a supply of boats being adequate apparently for summer needs. It was not until hard weather in the fall and the loss of a number of barges that the situation became acute. At the end of the year there were only a very few fore-and-aft coal vessels above 1,000 tons that had not chartered offshore.

SHORTAGE BECAME MORE ACUTE AT THE YEAR END

The prospect is that ocean freights will continue to be attractive to boats now engaged, at least until the war ends and unless coast freights get so high as to tempt them back. Such boats will be relatively independent of the coastwise market in any case. The profits on offshore charters and on sales of ships have been sensational, and in view of the tremendous shrinkage in tonnage as a direct result of the war, it was inevitable that coastwise freights would take a marked turn upward the moment conditions would permit.

In July there was such an equilibrium, as a result of the dull coal market, that seekers for tonnage were obliged

to pay the full market rate at the same time owners in their turn were unable to place spot boats except at concessions. There was also a surprising amount of re-chartering; shippers with tonnage on their hands that they were unable to place with their own trade turned it over to other shippers at current rates, the latter tending to be sensitive to the fluctuating demand for coal. In early September inquiry for coastwise boats was practically nil, and at a time when there were more American bottoms offshore than in any year since 1863. Soon, however, it was noticed that rates were susceptible to the least intimation of any contract demand, and by Oct. 15 the first 85c. charter was made. Had the rough weather in November continued, the advance would have been more sharp. As it was, \$1 and \$1.10 were paid, the latter on a 5,000-ton schooner, Norfolk to Portland, Me.; \$1.25 and \$1.35 followed quickly, and a storm of two days' duration late in November sent quotations to \$1.50. By Dec. 20 \$3 had been paid to Providence and \$3.50 to Boston from Hampton Roads. Consumers usually dependent on Pocahontas and New River in New England were confronted with a famine in boats.

Reading barge rates on bituminous, Philadelphia to Boston points, ruled at 80c. most of the year, until in November it was announced the rate would be \$1.25. Through the spring and summer and into the fall, rates from New York to points south of Cape Cod were 40 to 45c., stiffening to 50c. in November. Boats of that type were in strong demand for lighterage purposes in New York harbor and Sound rates had jumped to \$1.50 by Dec. 15. The rate on anthracite railroad transportation from New York to Boston continued to be 50c. to 55c., and 75c. from Philadelphia to Boston, the same as for several years.

CAPE COD CANAL

During 1915 the Cape Cod Canal was dredged to 20 ft., and a more intelligent opinion of its usefulness could be formed. The prejudice of the average mariner is strongly against such an innovation, and the fact that the approaches are so little known to most vessel masters is something it will take time to overcome. The new waterway has been used by some of the barge lines, but chiefly those operating from New York. It is still in a development stage, and its progress in usefulness is being followed with much interest. Rates were reduced from 7c. to 5½c. per cargo ton loaded and 4c. per cargo ton light.

Meanwhile, under an order of the Massachusetts Senate, the Board of Harbor and Land Commissioners is investigating with a view to the advisability of the purchase of the canal by the state.

✂

Coastwise Freights at the year end were still \$3.25 to \$3.50, Hampton Roads or Philadelphia to Boston, but the only bottoms to be had were old slow-sailing schooners with repairs yet to be made or barges that were not free of present charters for a month or more. Those who engaged tonnage then were therefore securing boats that probably would not load until February, and there was not quite the snap to the freight market that there was a fortnight ago. A lot of vessel property that was in the way of being abandoned had been hauled out, patched up and put into service. Particularly was this true on Long Island Sound, where old hulks were freely taken at rates up to \$1.50, New York to New Haven and Providence.

Coal Trade at Baltimore

The past year has probably been the most peculiar one in the history of the local coal trade. It has been a year of unexpected developments—some pleasing and some disappointing. It has been a year in which the “dope” has persistently gone wrong.

Everyone knows the generally flat industrial conditions that existed all through the opening months of 1915 and continued well into the summer. Then came the slow but sure industrial gain, spurred on by the flood of war orders that poured in on the steel and other industries that make goods needed by the contending nations.

From record low prices of midsummer, when all except specialized coals were selling at the mines considerably below the dollar mark and when slack was disposed of as low as 25c. a ton, a better condition developed, until the late fall and early winter saw a tightening coal trade. Indeed, December was ushered in with coal selling at better prices than prevailed during the December previous, although little coal was available outside of contract fuel.

CAR AND LABOR SHORTAGE

In October, November and December shortage of cars and labor at the mines caused complications of serious proportion. Coal became scarcer during that time, and prices continued to mount slowly.

Probably the most remarkable feature of the year was the rise and fall of a wonderful export trade. From the piers of the Baltimore & Ohio, Western Maryland and Northern Central railroads there was loaded on export account a little short of 2,000,000 tons. This more than doubles the record of 1914 and was made despite the fact that October, November and December showed a tremendous drop in the export movement, owing to the fact that ocean freights had risen to figures prohibitive to the coal trade, the Mediterranean rate from Baltimore, for instance, being quoted as high as \$20 a ton for delivery.

During the year the remarkable amount for this port of 600,000 tons went over all the piers for bunker purposes. The coke movement on export ran less than 60,000 tons, and the anthracite export movement a little more than 6,000 tons.

The Baltimore & Ohio R.R. was the principal handler. While the coastwise loading at this road's local piers showed a falling off, the record was more than made up by the immense export increase and the jump in bunker sales.

Domestic coal dumped at the Curtis Bay pier of the Baltimore & Ohio totaled a little more than 2,000,000 tons, while its export coal alone ran to nearly 1,225,000 tons. The total export and domestic coal dumped at the Curtis Bay piers therefore ran to more than 3,225,000 tons, or about 225,000 tons in excess of the total record of 1914, certainly a splendid showing for a flat domestic year.

During the year the Western Maryland R.R. dumped over its Port Covington pier a total of about 1,150,000 tons, or nearly double its record for dumpings in 1914. About 7,000 tons of coke and more than 600,000 tons of coal on export account were handled by this road.

The other railroad in Baltimore, the Northern Central, gives out no coal-movement figures, but it is estimated that the company sent to Baltimore more than 1,250,000 tons for all-rail delivery, for the most part anthracite, and

that it handled approximately 350,000 tons over its piers for bunker and export business, about evenly divided.

As the Baltimore & Ohio and Western Maryland between them handled approximately 1,500,000 all-rail coal in Baltimore, the total of all coal handled at the various railroad piers during 1915—export, domestic and bunker and the all-rail delivery for local use—brings a grand total in excess of 7,000,000 tons. This is about 1,000,000 tons above the record for 1914.

The retail anthracite trade in 1915 was fairly satisfactory, despite drawbacks in the months of November and December and especially poor receipts due to car and labor shortage. The spring season was poor, many more consumers than is ordinarily the case delaying purchasing. The low price periods of May and June passed with not more than half the usual buying.

Late summer, however, brought a rush of the belated ones, and the coal men who had stocked their yards reaped the harvest of better prices. The early winter found many orders on the books, and then came the problem of keeping abreast of contracts with deliveries from the mines slow. The full winter schedule became effective early in October, and there was little discounting. Because of growing demand and poor supply of fuel in the yards to draw from as a reserve, the coal men became discriminating, and quick pay was the order of the day for most of the trade.

NEW PIERS IN BALTIMORE DISTRICT

Developments planned or executed were a feature of the year. Many mining properties were opened up in western Maryland, West Virginia and Pennsylvania, and the capacity of mines, had labor been plentiful, would have been vastly increased. The railroads are making preparations for increased coal business. The Baltimore & Ohio is building a new coal pier to supplement its Curtis Bay plant and to cost, with approaches, about \$1,500,000. The Pennsylvania, too, has decided to go in for export trade more heavily and will build a giant steel and concrete coal pier at the Northern Central terminal. This pier, with yards, driers, etc., will cost approximately \$2,000,000. With ocean freight rates returned to normal, it would seem that nothing could stop Baltimore becoming a competitor for the record coal-exporting business of America.

✱

Coal at Buffalo

It is probable that the history of coal and coke in the Buffalo market will not need to be given any different character from that of other markets, except that Buffalo is more dependent on the Canadian trade than is any other sales center; and as Canada is buying only about half the normal amount, the falling off has injured Buffalo materially.

The slow state of the trade in bituminous, with prices at the bottom based on about \$5.65 for Pittsburgh lump and the consumer controlling the market, continued over from 1914 till late in July, when the increased movement of coal stiffened prices a trifle. Buffalo has, however, lagged behind most other markets all along. When Pittsburgh began to send in advanced quotations, sales agents of mines in that direction were in great difficulty. They protested that they could not get these prices and were looked upon as not up to their business.

Later on, the Buffalo market improved, especially locally and eastward, but it does not equal other markets yet. Even the Allegheny Valley mining district, though not including its neighbor Clearfield, which has a tide-water rate, failed to advance with Pittsburgh and stood at about \$2.50, with Pittsburgh insisting on \$2.80 for lump. About the time of closing the Lake trade sluggishness prevailed as usual, affecting slack most, but always reacting when the surplus slack is gone.

The principal change in the local iron situation was the sale in November of the works of the New York State Steel Co. to the Cambria Steel Co., of Philadelphia, which insures activity to a moribund concern. Other iron factories in this district, which were running slow during the summer, have been for some months running at full capacity. It appears that the Niagara Falls power plants are about to their limit of capacity, as there is a project on the part of the Buffalo company that distributes the current in that city to build a \$2,000,000 steam plant adjoining Buffalo to furnish additional electric energy. So this competitor of coal seems to be at its limit.

The anthracite situation remains unchanged, unless it may be that there is more independent coal selling than there was a year ago. It was sold at cut prices during the slack summer season, but some of the loss will be made up in premiums during the winter. It is chiefly handled by bituminous jobbers, who do not try to maintain a uniform price. Competition from natural gas continues strong. One anthracite retailer estimates that enough gas is burned to displace 400,000 tons of domestic anthracite in the city annually, but that is rather an extreme figure. About 350,000 tons of anthracite is used in Buffalo in a year. On account of the sharp competition the sale of that fuel does not increase materially.

Cincinnati Coal Market

While the conservative coal man will not by any means admit that 1915 was the worst year ever experienced, it is fairly safe to say that in many respects it will be for a long time remembered as one of the most extraordinary years that the coal trade has had to face. This is true of the Cincinnati market as of others affected by the same general conditions, which means virtually all of the larger cities in the East, the Middle West and the Northwest.

Following the unsettled business and industrial conditions which prevailed in 1914, the trade in this vicinity rather looked forward to a decided improvement in 1915, largely because it was felt that it was about time for a turn in affairs. This expectation, however, was disappointed, as the early part of the year did not see anything like the demand which was looked for in any department of the trade, and the summer and early fall proved to be extraordinarily sluggish. Consumption, in fact, during the first six months of the year was so far below normal as to leave the trade practically helpless. A conservative estimate of the volume of consumption during that period is in the neighborhood of 50 per cent. of the usual amount.

This indicates what the trade was "up against" and gives a fair measure of the anxiety of operators and dealers alike to see the long-expected improvement materialize with the coming of the contracting season and

the first advance signs of the season of 1915-16. Again, however, hopes of improvement were dashed, sluggishness in the demand being almost wholly responsible for this condition. Poor demand was coupled as usual with an oversupply of all grades, except smokeless, and the combination brought prices to unheard-of marks.

While contracting on the part of the larger consumers of fuel for steam purposes was not postponed long, as a rule, it was only natural that there should be some concessions in prices in view of the situation existing at the time of closing agreements for the coming year's supply and of the apparent improbability of improvement. In some instances, undoubtedly, contracts were closed at heavy concessions from former figures, and the average concession ran close to 10c. a ton, only those operators very fortunately situated with reference to the quality of their coal and the loyalty of their customers being able to shade this to any extent.

Domestic contracts, however, were as a rule postponed by dealers, who were either loaded up with bargain coal purchased during the spring and summer or who felt that it would not be difficult to secure ample supplies later on. Observation in the latter part of the year leads to the conclusion that the ruinous prices offered early in the year by operators who have adopted the mistaken policy of forcing their coal on the market regardless of the lack of a real demand had enabled dealers to fill their yards with coal at prices lower than ever before. This naturally caused them to assume an attitude of complete indifference to the efforts of salesmen early in the fall, when under ordinary circumstances business would have been most active.

FALL BUSINESS DULL

Under the conditions indicated fall business was extremely dull. Producing conditions in the West Virginia and eastern Kentucky fields serving this market were the best possible. Excellent weather, an ample supply of labor and plenty of rolling stock served to keep the amount of coal on the market well above the demand, as in fact it was during the greater part of the year. It was not until the rapidly increasing demands of the manufacturing trade, coupled with the requirements of the enormous crops of the South and the Middle West, brought on a car shortage almost overnight that the situation changed for the better, so far as the coal market was concerned.

Beginning about Nov. 1 the supply of cars available at the mines was reduced in some cases to not more than one-third of the usual six-day supply. Even this served only to hold up the market and steady prices, as the demand was kept down during practically the entire month of November by mild weather and an unimproved industrial situation. With winter in sight and no prospects of a better car supply, it became increasingly easy to dispose of the available coal on the market; but it required the more severe weather of December to bring the demand and the supply to a point where they equaled each other, and it was not until the latter part of November or the first of December that consumption in the various departments of the market reached a normal figure.

An extremely interesting feature of the year's business, affecting this market only indirectly, but none the less tangibly, was the export trade in coal from the West

Virginia fields, growing out of the elimination of English coal from the world's markets on account of the war. Mediterranean and South American markets have received more coal than ever before from West Virginia fields. While this has largely consisted of the smokeless varieties, of which it is estimated that not less than 400,000 tons a month has been moving from tidewater recently, the movement has necessarily had an effect on the bituminous market, if only in sentiment. Moreover, in view of the always limited supply of smokeless, operators are taking steps to place some of the better grades of bituminous with the foreign trade, which will tend to relieve the oversupply in this and other markets, with a highly beneficial effect on the trade.

While prices have been poor during almost the entire year, the volume of coal moved has been remarkably large, especially during the latter half of the year. All of the coal-carrying roads, notably the Chesapeake & Ohio and the Norfolk & Western, serving the West Virginia fields and entering Cincinnati, made new records for tonnage hauled during the period indicated. The total volume of coal reaching Cincinnati was further increased by the unprecedented shipments from the eastern Kentucky fields moving over the Louisville & Nashville. Eastern Kentucky coals have made rapid progress in this and nearby markets during the past year, aided materially by the idleness in the Ohio fields. These considerations will explain the heavy increase over 1914 in shipments indicated by the following figures furnished by the Cincinnati Chamber of Commerce. Those for 1915 cover receipts and shipments up to Dec. 18, while those for 1914, with which they are compared, are for the entire year. River figures are complete, however, only for the first 11 months of 1915 and will doubtless be heavily increased by December records. Figures represent tons of 2,000 lb.

	1914		1915	
	Receipts	Shipments	Receipts	Shipments
Bituminous, all kinds	6,088,020	4,548,557	12,889,979	10,211,083
Anthracite	20,900	13,816	6,616	4,568
Coke	83,491	36,361	85,541	42,832
River coal	1,635,935	326,215	872,443	91,469

Coal Receipts by Water at the Port of Boston

The accompanying tables show the total coal receipts at Boston, furnished by courtesy of the Boston Chamber of Commerce. Bituminous arrivals were somewhat less than in 1914, and the latter was smaller in tonnage than

1913. Anthracite deliveries showed a surprisingly large decrease as compared with 1914.

RECEIPTS OF ANTHRACITE COAL BY SEA AT BOSTON

	From Philadelphia		From New York Ports		Totals	
	1914	1915	1914	1915	1914	1915
January	43,375	44,754	54,797	72,030	98,172	116,784
February	28,708	17,463	53,895	47,238	82,603	64,701
March	44,489	32,373	87,779	83,899	132,268	116,272
April	66,767	35,674	96,577	69,670	163,344	105,344
May	59,337	54,822	136,778	117,531	196,115	172,358
June	65,300	43,657	104,286	90,828	169,586	134,485
July	55,934	59,298	89,274	71,871	145,208	131,169
August	51,984	57,912	105,452	77,977	157,436	135,889
September	69,111	55,421	108,006	91,262	177,117	146,683
October	59,130	48,953	87,326	94,661	146,456	143,614
November	39,462	48,750	92,244	74,482	131,706	123,232
December	41,201	49,612	77,827	69,822	119,028	119,434
Totals	1915	548,689	960,331	1,509,960		
	1914	624,798	1,094,241	1,719,099		
	1913	582,183	1,094,128	1,676,311		
	1912	579,778	1,054,378	1,554,156		
	1911	592,368	1,289,399	1,881,767		

New Indiana Sales Organization

The operators in the Indiana coal field north of the Vandalia R.R. have formed an organization after the Franklin County, Illinois, plan, by which uniformity of sales prices will be maintained. The new organization includes 35 mines—only one in the entire field remaining without the fold. These include all of the Clinton field and the new territory just above Terre Haute on the west side of the Wabash River, all of which enjoy a 77c. rate to Chicago. This organization will be known as the Northern Indiana Coal Trade Bureau.

Charles G. Hall, formerly fuel agent of the Chicago & Eastern Illinois R.R., has been elected secretary of the association and will be in charge of activities.

Under the plan of the Franklin County Coal Operators' Association the sales territory is divided into certain zones, and the number of daily shipments from each zone is reported to the commissioner by each producer, with prices at which sales are made. If the average price at any time is more than a certain member receives for his coal, he is advised that his figures are not high enough. No member is obligated as to sales prices, and consequently no legal prosecution is possible.

It is generally understood that the Federal authorities have passively approved the Franklin County plan. No penalties for failure to sell coal at proper prices are inflicted by the organization, and its success depends wholly upon the support and information obtained from members. Thus each operator is informed whether he is securing proper market prices for his product. The Indiana organization is to become effective Jan. 1, and it is likely that its headquarters will be in Chicago.

RECEIPTS OF BITUMINOUS COAL BY SEA AT BOSTON, SHOWING PORT OF SHIPMENT*

	Baltimore†		Norfolk†		Newport News		Philadelphia		New York		Totals		Foreign§	
	1914	1915	1914	1915	1914	1915	1914	1915	1914	1915	1914	1915	1914	1915
January	90,891	124,992	202,986	210,172	57,776	50,311	29,873	22,633	.....	.....	381,526	408,108	27,100	45,083
February	100,143	107,439	193,630	193,027	43,938	52,062	49,636	49,974	.....	.....	387,347	402,502	14,200	48,379
March	92,463	122,733	224,945	253,994	70,966	49,676	35,945	54,540	.....	.....	424,319	480,943	21,367	41,166
April	107,870	108,744	232,458	181,847	53,397	27,100	24,400	35,989	1,625	.....	419,750	353,680	27,500	55,785
May	112,518	90,633	247,494	211,326	86,237	75,402	34,427	36,769	1,470	.....	482,146	414,130	50	27,118
June	109,271	81,565	184,340	94,903	50,296	40,002	52,739	28,709	.....	.....	396,646	360,694	.....	19,538
July	108,285	88,704	215,926	177,923	31,957	30,620	27,352	31,493	.....	.....	383,520	328,740	13,976	20,086
August	86,665	84,258	240,366	184,128	46,420	77,033	63,621	18,168	.....	6,732	437,072	370,319	14,000	27,798
September	99,755	92,138	254,920	191,293	50,751	44,864	46,515	45,941	.....	8,873	451,941	383,109	14,129	27,946
October	86,565	95,736	227,812	204,192	31,560	87,284	18,138	23,321	.....	4,400	364,075	414,933	20,850	34,599
November	102,372	97,459	225,159	126,967	53,817	82,400	30,793	28,618	.....	2,200	412,141	337,644	56,093	20,081
December	61,468	78,030	187,596	182,758	34,254	64,175	42,967	27,772	.....	2,399	326,285	355,510	48,787	73,036
Totals 1915	1,172,431	1,172,431	2,212,530	680,929	403,927	24,604	4,610,312	440,615						
1914	1,158,266	1,158,266	2,637,632	611,369	456,446	3,095	4,866,778	258,647						
1913	1,164,514	1,164,514	2,485,679	737,647	553,573	3,274	4,944,687	269,659						
1912	1,361,994	1,361,994	1,836,750	945,803	322,334	9,639	4,465,520	309,106						
1911	1,576,397	1,576,397	1,218,391	921,220	381,961	3,776	4,101,745	263,861						
1910	1,595,554	1,595,554	795,475	1,243,857	292,636	25,515	3,954,251	296,564						
1903	481,111	481,111	314,505	596,439	595,824	93,940	2,081,819	1,226,134						

* Courtesy of the Boston Chamber of Commerce, Statistics Department. † Includes small shipments from Washington and Georgetown, D. C. ‡ Lamberts Point and Sewalls Point. § Almost exclusively from Louisburg, Cape Breton, except during 1903, when a large tonnage came from Great Britain to relieve shortage because of strike.

The Philadelphia Anthracite Market During 1915

SYNOPSIS—The anthracite trade was marked by numerous developments that created uncertainties and confusion throughout the year. Difficulties with the Pennsylvania state tax were particularly troublesome, while the threatened readjustment in freight rates by both the state and interstate commissions caused some anxiety. The market was generally normal, with a few minor exceptions, throughout the year.

The year 1915 must be recorded in the history of the anthracite trade as one of many unusual developments. Right at the opening of the year came the announcement of the Public Service Commission ordering a reduction of 40c. in the freight rates on coal to Philadelphia. This decision was handed down Dec. 12, 1914, to become effective 30 days later, on Jan. 13. In the meantime the railroad companies appealed the decision.

The year, from a weather standpoint, did not begin very auspiciously, as January was an extremely mild month. To add to this the city was in the throes of an industrial depression, so that the retailers were generally forced to adopt a strictly cash system, and while they lost many customers, this materially improved their financial position. During the month the mines were operated only about three days a week and even so found some difficulty in placing the different sizes. Pea particularly became difficult to move, and stove was also in poor shape, while chestnut was in somewhat better demand.

A continuation of the mild weather through February blasted the hopes of getting a good tonnage for the winter. Coal was offered off circular, and in a number of instances sales were made at the April circular plus the tax. Pea coal became very heavy at this time. Owing to the short working time at the collieries and the consequent curtailment in the production of steam sizes, the market on these grades stiffened.

The legislature was in session at this time, and a bill was introduced with the intention of repealing the anthracite-tax act, but to offset this another act was drawn and passed with the distinct purpose of overcoming any legal objections which had been raised against the 1913 law.

MARCH WAS BEST MONTH

March was probably the best month of the whole year for the coal man, in spite of the fact that the market slumped badly toward the end. Selling of coal at the April circular became more pronounced, and this so affected the big companies that many of their collieries were closed down. This, together with gradual resumption of full time at many industrial plants due to numerous war-munition contracts, created a shortage of steam sizes. Toward the end of the month there was also a pronounced cold snap that tended to boost the trade and gave the dealers an opportunity to get their yards cleaned up ready for the cheap April coal. The month also saw an increased activity among the dealers in the Kensington and West Philadelphia sections of the city who had been indulging in a price-cutting campaign for the past year.

With a reduction of 50c. from the circular on Apr. 1 the market would ordinarily have started with a rush. However, the Easter holidays at this time caused a shut-down for a week or ten days, though the fact that the Greek Easter holidays happened at the same time somewhat lessened the usual period of idleness, and for the remaining portion of the month the collieries were quite busy. The retail trade experienced an unexpected boost owing to the remarkable unprecedented snowstorm of Apr. 3. This caught many of them off their guard, as they had in nearly all cases about cleaned up their yards preparatory to the April stocking.

This month the companies began to sell their pea coal at \$2, as against their contract price of \$2.25 and circular price of \$2.50. There was no open announcement made of the new price, some of those in authority denying it at first. The individuals who had for some time been selling at the \$2 figure immediately met the reduced price by going from 10c. to 25c. lower.

The decision of the Dauphin County Court in the suit brought by the Alden Coal Co. to test the constitutionality of the coal-tax act of 1913 was handed down at this time. The court upheld the law, but it was promptly appealed by the coal interests.

In May the regular increase of 10c. above April prices was made. The dealers at this time were putting in heavy stocks of prepared sizes, but an odd situation developed. There were the usual stocking orders offered, but on account of the money stringency most of the orders were placed with the understanding that payment would be deferred until September. Stove was very active, even becoming scarce at times, but chestnut was heavy and the price off. Pea became a football with the individuals, who cut from 20c. to 25c. below the \$2 price and in one instance sold as low as \$1.60 without the tax. The steam sizes were also heavy toward the close of the month and difficult to move at any price.

THE MIDSUMMER DULLNESS

May opened with a continuation of the unseasonable low temperatures, and the retailers received quite a little unexpected business. Prices, however, were very unsettled, stove being the only size that held anywhere near circular, and even some of this, together with the other prepared sizes, was moved at the April prices. Pea continued to bear the brunt of the price cutting and could be bought at \$1.75 from any except the very largest companies, while in a number of instances as low as \$1.50 was reported, although it is not thought any of the standard grades were sold at this price. It was also reported on good authority that several of the very largest operators made price concessions on prepared sizes in addition to long credit terms. The Board of Education contract for 37,000 tons of pea coal and 19,000 tons of prepared sizes (No. 508, Vol. 7, pp. 665, 955, 1087) was let during the month and brought out the largest number of bidders who had ever competed for it. The award was made to dealers who took business practically at cost, simply to insure work for their equipment over the dull summer period.

July, usually considered one of the two worst months of the year, lived up to its reputation. Despite the fact that most collieries were on short time, much coal went into storage, especially the steam sizes. Pea coal continued very low with large quantities offering at \$1.50 and with few acceptances. The month was particularly hard on the individual shippers, who suffered heavy demurrage charges. It developed about this time that a number of the big companies had protected their selected trade on prepared sizes at the June prices for a number of months ahead.

The Supreme Court this month took testimony on the appeal of the state-tax case from the decision of the Dauphin County Court, and decision was reserved until a later date.

August made an even poorer showing than July, and business reached the lowest level of the year. The prepared grades could be bought in many instances at the April circular, with a concession of no tax when the order was made to cover a large block of chestnut, the duldest size of all. Pea, while still badly off circular, seemed to have reached bottom in July, and nothing less than \$1.75 was offered, with very little sold.

A drastic order of the Interstate Commerce Commission was handed down this month ordering the railroads to reduce their tidewater freight rates, though the roads immediately appealed the case.

September had been looked forward to as the starting point of a busy season, and it opened with some real fall weather, to which business promptly responded. But there was a recurrence of high temperatures, and all sizes went badly off circular, with the possible exception of stove. There was a concerted effort to get pea back to the \$2.25 price, which seemed to show results until the warm weather returned.

Though the full winter circular went into effect this month, the retail trade in general failed to ask the usual winter schedule for coal. Buckwheat, which had been especially inactive all summer, for the first time began to show strength as the manufacturing plants in this district increased operations.

FALL TRADE OPENS UP BRISKLY

The cool spell that marked the closing days of September extended into October, and the mining companies began to receive orders in good volume. The fact that most dealers urged prompt shipment indicated that the people had but little coal in their cellars. All sizes showed increased strength, and concessions on the circulars were confined to dropping the state tax. Pea moved freely at \$2, with persistent rumors that the next month would see a price of \$2.25 in effect, although it was known that the large buyers had been protected on the \$2 price until Jan. 1. Steam sizes began to move faster as the manufacturing interests realized that a suspension at the mines was more than a possibility. For the first time a car shortage was felt.

While it was expected that the month would close with a big tonnage, the final reports showed that the tonnage was somewhat behind the same period of the previous year.

The outstanding feature of the month was the decision of the State Supreme Court declaring the anthracite-tax act of 1913 unconstitutional.

In November the business really began to get into its stride, although a short period of warm weather had a tendency to check the movement to some extent. An interesting feature was the increase in the price of pea coal to \$2.25. There was, however, very little coal sold at the new price, as most dealers were protected at the \$2 figure until the first of the year. It did nevertheless stimulate buying, as it was rumored that the price would be advanced to \$2.50 later on.

As the state tax law of 1913 had just been declared invalid, there was much speculation as to whether the coal companies would refund the amount of the tax. In event of the decision being upheld there seemed to be no way by which the mining companies could be compelled to refund. However, one by one the larger companies issued statements that as soon as all legal obstacles were removed they would turn the money over to their customers. In the meanwhile the state appealed the decision of the court, and the money was again tied up for a more or less indefinite period.

It was also rumored during the month that the dealers were going to receive a refund on account of the reduced freight rates that were to have gone into effect on Jan. 13, 1915.

December found the anthracite business moving along steadily, with stove coal in greatest demand. The tendency to maintain wholesale prices grew stronger. Toward the middle of the month pea coal began to sell for \$2.25, and those dealers who were protected on the \$2 price until the first of the year began to call for heavy shipments. The car supply seriously affected the trade, and many companies were compelled to close their collieries one to three days a week. Owing to the rising bituminous market, the anthracite steam coals, particularly buckwheat and rice, took on new life, and the companies were unable to fill their orders in the latter half of the month. Chestnut coal, which had been the laggard among the prepared sizes, forged rapidly to the front, and by the end of the month it had displaced stove as the leader.

During the month new contract prices were announced, but the companies declined to make contracts for more than the first three months of the year. The new prices showed an advance, pea having 5c. per ton added, while buckwheat was increased 15c. It was also intimated on good authority that on the first of the year a new circular would be issued, increasing the price on all sizes of coal. The reason assigned for the increase was the cost of insuring under the new compensation act that became effective with the first of the year.

BITUMINOUS OPENING PERIOD

The year started with very poor prospects. Between the industrial depression and the complete shutting off of the bunker trade on account of the European War, business was in very bad condition, with prices down to rock bottom. However, hopes were well founded for a revival in industrial conditions, and it also seemed evident that the future would see some export business with the countries usually supplied from the British Isles, particularly South America. As Apr. 1, the usual contracting time, approached, the mining interests seemed very anxious to sign up at the old figures, and quite a good deal of business was closed on this basis, but it was also reported that a big tonnage was taken at even lower fig-

ures. As the month advanced, some inquiries began to come in from foreign countries, but the freight rates seemed almost prohibitive. At this time, too, reports of the industrial revival began to be more than sanguine expectations and commenced to crystallize into actuality.

In May business seemed to have improved somewhat so far as tonnage was concerned, but prices continued extremely low. There was also a good deal of contract business closed, and it was now claimed that the larger proportion of the new contracts had been made at lower figures than the previous year.

During June the trade showed signs of strengthening, due principally to the fact that the steel mills were increasing operations on munition orders. The export trade also increased, and numerous large orders were reported as in hand, due to the entering of Italy into the war. July found the domestic business in the throes of the usual midsummer dullness in spite of the fact that the foreign business had increased considerably, especially to South America and France, Italy and Spain. The one drawback to this trade was the inability to secure sufficient vessel tonnage.

IMPROVEMENT TOWARD THE YEAR END

In August the trade began to feel a little of the boom in the steel industry, but not sufficient to affect prices except on slack. Because of the lack of making three-quarter sizes, slack became somewhat scarce and there was a total increase of about 15c. on this grade. The labor shortage began to make itself felt at this time. The export trade experienced a big increase, especially when the British Government announced the suspension of exports after Sept. 1. The increase is well shown by the tonnage figures of 171,127 for August as compared with 59,855 for the same month of 1914.

During September the domestic trade began to show a steady improvement, although without any particular change in prices, with the possible exception of slack. The car supply now entered as a most disturbing factor. The export business continued good, with prices for this coal averaging about 10c. higher than for domestic trade. Great difficulty was experienced, however, in getting sufficient vessels to take care of the tonnage.

October witnessed a continuation of the quiet and gradual recovery of the domestic trade, and the matter of car supply became more acute. The export business began to fall off during the month, owing to the lack of vessels. The improving domestic market also had a tendency to cause some shippers to desert the foreign trade. Prices showed slight increases—on an average of 10c. to 15c. on all grades.

The domestic business had improved so well during November that there was no particular difficulty in getting orders, the principal trouble being the lack of cars and shortage of labor. As a consequence, prices rose from 10c. to 20c. on all grades. At times those concerns with low-price contracts had difficulty in meeting their obligations and were compelled to go into the market and buy coal at a higher price than they were selling at.

The export trade dwindled badly. It developed that large shipments were being made from the British Isles despite the fact that all exports were supposed to have ceased Sept. 1. This was apparently effective for only a short time, although no public notice has been made of its recall.

Three factors served to make the bituminous market in December one of the most exciting in the history of the trade. On one side was the extraordinary demand for coal, due to the industrial revival and also to the expected labor trouble in the region after the first of April. To offset this was the fact that the railroads were so beset with business of all kinds that they were far from being able to supply the cars required by the coal trade. As a consequence, the prices, which began to soar in November, continued into December. At the beginning of the month it was predicted that \$2 coal would be reached by Christmas, yet as a matter of fact \$3 was reached before that time.

December also saw the dwindling of the export trade, owing to the high freights. The coastwise freights to New England also reached such a point that large demands were made from that territory for rail shipments.

THE TRUST PROBLEM

The month of June witnessed interesting developments in the suits of the Government to disassociate the anthracite railroads from participation in the mining of coal. Two opinions were handed down by different courts. The first one bore on the Lackawanna case, being the decree issued by the United States Supreme Court on an appeal from the United States District Court, of New Jersey. In this instance the highest court upheld the decision of the lower court and ruled that the Lackawanna did violate the commodities clause of the Hepburn act, the decision being based principally on the celebrated "65-per cent. contract" by which the coal company had agreed to purchase from the railroad company all coal mined at a price equal to 65 per cent. of the New York price on the day of delivery. The court directed that the companies should be actually separated, and steps were immediately taken to comply with the decision.

The other decision bore on the Reading interests and was made by the United States District Court at Philadelphia. It was generally in favor of the company in that it was decreed that there was no violation of the commodities act and that the Philadelphia & Reading Coal and Iron Co. was separate and distinct from the railroad company. The court, however, deemed that because of the Reading's close interest in the Central Railroad of New Jersey by stock ownership there should be a separation of this latter company from the Lehigh & Wilkes-Barre Coal Co., so as to make the "union of control unobjectionable." The attorneys for both sides were instructed to confer and decide upon a method by which this separation could be arranged in accordance with the law as interpreted by the court. This was arranged by having the Central Railroad of New Jersey sever all connection with the coal company. However, the Government did not assent to the decision in its entirety and gave notice of an appeal to the United States Supreme Court.

In December the Reading Co. carried to the Supreme Court its appeal against the decision of the United States District Court whereby, in order to sever the Reading's connection with the Lehigh & Wilkes-Barre Coal Co., through stock ownership in the Central Railroad of New Jersey, this latter company was directed to dispose of its interest in the Lehigh & Wilkes-Barre Co. Previous to this the Government had also appealed the decision, so that the issue now stands before the highest court for final adjustment.

Pittsburgh District in 1915

By B. E. V. LUTY*

SYNOPSIS—The customary slowness of the coal industry in responding to improved industrial conditions prevented the trade from benefiting appreciably by the increased activity in other lines, though a strong market prevailed at the year end. There was heavy consumption in iron and steel lines, but the Lake trade was a distinct disappointment.

The coal industry is one that is traditionally slow in responding to favorable influences, and it is doubtless for this reason that the year 1915 is to be characterized as one of improving prospects rather than of improved conditions actually realized. The Pittsburgh coal district found it a better year than 1914, but the comparison is not particularly favorable, since the latter was exceptionally poor.

A particularly sharp distinction must be made between the Pittsburgh coal districts and the West Virginia and more eastern districts in considering 1915 conditions, for the reason that an influence upon the coal industry in general of the greatest importance was the overseas export demand, and this did not reach the Pittsburgh district to any extent. Indeed, so far as export demand in general was concerned, the Pittsburgh district lost in 1915 even more than in 1914 through there being decreased exports to Canada from the Pittsburgh district and from districts that are competitive in the home market with the Pittsburgh district. Compared with 1913, the last normal year in the export trade, 1915 witnessed a decrease of almost one-half in the exports to Canada, although an increase of one-half in the overseas exports.

STEADY IMPROVEMENT THROUGHOUT THE YEAR

The year in the Pittsburgh coal trade was really somewhat better than appears from a retrospect of the views entertained from day to day and week to week by members of the trade, for there was continually before the trade prospects of enlarged markets and better prices, although these prospects seemed never to be realized. As a matter of fact, conditions did improve almost continuously through the year, but the realization from month to month fell so far short of the expectations that there was continually a feeling of disappointment, whereas a comparison of conditions at the beginning and at the end of the year shows that there was a very decided improvement. Thus, in the two closing months of 1914 the mines in the district were not operating at more than 40 per cent. of capacity, while in the closing months of 1915 they were operating at not far from 75 per cent. of capacity.

As the coal industry is slow to respond to improving conditions, there was little improvement in prices until near the close of the year. At the opening free coal was being sold frequently at \$1 per net ton for mine-run, and while higher prices were often realized, there was no time until the opening of Lake navigation that

a definitely higher minimum could be quoted. The market responded but little to the millions of tons the Lake trade took from the district, for the movement was quite below expectations.

In the fall the greatly improved industrial conditions, involving a very large increase in the line demand for coal, raised prices out of their rut, and toward the close of the Lake season free coal was quotable at \$1.15 for mine-run, while on account of a group of favorable conditions the termination of Lake shipments did not produce a definite weakness in the market, as it usually has done. In the first place the Lake shipments were so light that the loss was unusually small. In the second place there was a further increase in demand from the iron and steel industry and other large consumers, while the railroad consumption increased materially. Thirdly, there was freer stocking of coal by consumers for the winter, as they feared car shortages and had a great deal at stake when they were running their manufacturing establishments at full capacity and were nevertheless falling behind in filling their orders. Finally, the tone of the market was greatly improved by prospects that there would be heavy stocking against a possible suspension of mining Apr. 1, 1916, a particularly important date, since both the bituminous and anthracite wage scales would expire at that time. The market price of free coal may be said to have advanced 25c. during 1915, from \$1 to \$1.05 up to \$1.25 to \$1.30 for mine-run.

LAKE SHIPMENTS

That the volume of Lake coal demand proved a keen disappointment to Pittsburgh district shippers goes without saying. The tonnage had been particularly poor in 1914, and everyone hoped for a decided reversal in 1915. Stocks at upper Lake ports at the opening of navigation proved unexpectedly large, and hopes that they would be so depleted by the middle of the season as to produce a good ending were not realized.

The light shipments of Lake coal, which is almost wholly $\frac{3}{4}$ in., had one mitigating circumstance—the market price of slack was well held. A change of fundamental importance is the steady increase in the use of slack by line consumers of Pittsburgh coal. For years the iron and steel industry had been installing stokers, not only for steam generation, but for heating and other furnaces employing slack very largely. In the near future the typical consumer will be one who uses slack or crushed coal.

The year 1916 opens with particularly bright prospects for the Pittsburgh coal district. Its chief customer, the portion of the iron and steel industry tributary to it, is operating at its maximum capacity—a capacity materially increased as compared with 1913, when it last operated at capacity. In fact, the industry is operating not merely at capacity, but under the highest pressure that can be applied. The railroads are moving more freight than ever before in their history. If the wage-scale settlement threatens some difficulty, there is compensation in the demand that is likely to be experienced beforehand for stocking, while afterward the Lake shipments will relieve any possible congestion.

*Oliver Building, Pittsburgh, Penn.

Connellsville and Byproduct Coke Industries in 1915

BY B. E. V. LUTY*

SYNOPSIS—The broad expansion in byproduct-coking practice and more general adoption of this grade in the manufacture of iron have caused a definite relapse in the Connellsville region. In spite of the largest steel production on record, the coke market failed to respond in the customary way.

At long range, in a series of years, the vital fact in Connellsville coke-trade developments of 1915 was the failure of the market to respond sharply to a great revival in the iron and steel trade. The iron industry has its ups and downs. Hitherto the coke market has followed these ups and downs not in halting fashion, but with the greatest vigor, descending to relatively greater depths and ascending to equally higher altitudes than pig iron. In 1915 the iron and steel industry experienced one of the greatest booms in all its history, but coke responded in a half-hearted fashion.

At the beginning of 1915 the demand for coke in general was poor, and that for beehive coke particularly so. In 1907, the year of maximum production of beehive coke—35,171,665 short tons—the output of byproduct coke was only 5,607,899 tons. Together they provided for the manufacture of 25,781,361 gross tons of pig iron. At the beginning of 1915 pig iron was being produced at the rate of only 18,000,000 tons a year, but the number of byproduct ovens had increased from 3,684 to 5,809. Connellsville furnace coke sold at about \$1.65 on contracts for the first half of 1915 and at \$1.70 to \$1.75 on contracts for the entire year, while furnace coke for prompt shipment was held at about \$1.55.

The coke trade did not fully realize the situation that confronted it. Undoubtedly the expectation in most coke circles was that an improvement in the iron industry in 1915 would be attended by the usual improvement in the coke trade. That would mean, according to precedent, that if pig iron should advance, say, 25 per cent., coke would advance from 50 to 100 per cent. After the middle of the year coke prices hardened somewhat, but the improvement was small and quite out of keeping with the improvement in pig iron.

MAKING NEW CONTRACTS

A curious thing occurred in the making of contracts for Connellsville furnace coke for 1916. The movement began in September and was largely over by the middle of October. The market was steady, with two varieties of contract in vogue. One was at flat prices, generally \$2.35 up to possibly \$2.50 for a six-month contract and about \$2.25 for a contract covering delivery over the entire year 1916. The other was a sliding-scale contract based upon pig iron, with certain minimum prices and a provision that coke should advance on monthly settlements 20 per cent. as much as pig iron might advance.

During the contracting period it was debatable, of course, which form of contract was the better for buyer or seller. Broadly speaking, it would require pig iron

to rule at 50c. or \$1 a ton higher than the existing market to make settlement prices the same on sliding-scale contracts as on fixed-price contracts. Such an advance was expected in some quarters, but not in all. The curious thing was that within two months of the signing of these sliding-scale contracts and a month before they would become operative, basic pig iron at valley furnaces, on which most of the sliding-scale contracts were based, rose not 50c. but \$3, from \$15 to \$18.

To revert to the byproduct oven: While at the beginning of 1915 there were 5,809 retort ovens in the United States, several hundred more were completed during the year, the largest addition being the 214 retorts added by the Lehigh Coke Co., related to the Bethlehem Steel Co., doubling the capacity of the plant, whereby it not only supplies the steel company's blast furnaces, but will in 1916 be a seller of coke possibly to the extent of 100,000 tons a month. At the end of 1915 there were in course of erection about 1,000 retorts, the great majority of them to become operative during the first six months of 1916.

While the United States was making pig iron at the rate of 18,000,000 tons a year at the beginning of 1915, at the end of the year it was producing at the rate of 38,600,000 tons. This was substantially its full capacity, and yet there were idle beehive ovens. Practically no further increase in coke consumption could be expected, and yet there was sufficient additional byproduct capacity directly in sight to produce 3,000,000 or 4,000,000 tons of coke a year at the least, with several blast-furnace interests still contemplating the addition of byproduct ovens, which could be completed possibly in twelve months.

THE J. V. THOMPSON FAILURE

An event of the year was the failure of Josiah V. Thompson, of Uniontown, Penn., on Jan. 19, 1915. Mr. Thompson was a very large speculator in coking-coal lands, largely in Greene County, Pennsylvania. Most of his purchases and leases were on the theory that in the growth of the iron industry the Connellsville coke industry would be forced to extend southeast into Greene County. Perhaps Mr. Thompson's burden could have been carried if the iron industry had not turned to byproduct coking and particularly if financial and industrial conditions had not become so bad in the latter part of 1914, but doubts may be entertained as to this.

The important thing apparent was that with the beehive process the ovens are built over the coal, and the blast-furnace interest that desires to protect its future must acquire a large tract of coking coal and build ovens on the surface, shipping the coke to the furnaces. With the retort process the blast-furnace interest builds its coke plant adjacent to the blast furnaces, employing the gas in its own manufacturing operations and securing coal as it will. A large coking-coal reserve acreage is not essential, because coal can be drawn from one point or another. The sellers of coal are in competition, and all that is necessary is to pay the freight. The blast-furnace interest invests its money in the expensive byproduct ovens instead of in coal acreage and knows precisely what it is getting.

*Oliver Building, Pittsburgh, Penn.

Labor Difficulties in 1915

SYNOPSIS—The year past should have been an off year, because the wage contracts ought to have been made on Apr. 1, 1914, but many troubles were carried on from the year before. Thus there were strikes and lockouts in Ohio, some of the latter still persisting. In Colorado peace seems assured for a few years.

Anyone might anticipate that the year 1916 will be a period of strife in the coal business. The agreements in both bituminous and anthracite regions come to an end on Apr. 1, and new arrangements have to be made, so a struggle is to be anticipated.

But if the year is any more troubled than 1915, an off year by all calculations, then indeed we have an unenviable prospect, even though the record of 1914 is not attained. For 1915 opened with the eastern Ohio strike in full swing and with miners starving in Illinois and western Pennsylvania.

The eastern Ohio operators, who had waited for the men to return to work for nine months, were beginning to tire and to talk unpleasantly of hiring strike breakers and evicting their tenants. They were disposed to argue, probably without any truth, that the men believed themselves the victims and not the beneficiaries of the union.

As a matter of fact, in the end the companies did not hire strike breakers and did not succeed in their attempted evictions, being half-hearted and ill supported by the law. Moreover, the men for the most part were perfectly loyal to the union and were not at all disposed to break away and sign up at any scale but that to which the whole sub-district would assent. Yet there are always some exceptions, and it is true some were tired of idleness and of union policies, and a little work was done at some of the mines for a short while.

FEDERAL DEPARTMENT OF LABOR FAILS AS USUAL

It was thought for a short time that the two arbitrators, Hywell Davis and Daniel J. Keefe, who were appointed by the Department of Labor on Jan. 1, would successfully show that the operators were right in their contentions and that the miners were headed to their own destruction, but the report when made, while it declared the operators were right, was almost completely smothered. It was evident that the pacificators were not intended to make a report favoring capital. Until we get braver men, with more resolute convictions, it will be useless to appoint commissions of inquiry:

If the partial report as it appeared in the papers was reasonably representative, it is fair to point out that it was well guarded in expression. The arbitrators started their finding with a preface—"If it is true." For what were they appointed if not to find out the truth? Were they justified in asking the public to perform the duty they themselves were paid to undertake? Apparently they based their information on the work of the investigating body, which advocated the passing of the Green antiscram law. If they did, then why did they not say so and thus place the authority somewhere?

On Apr. 20 the Coshocton district in Ohio—a small region with small mines—signed up. The public was then

determined to get the larger district in line. Governor Willis brought the contending parties together at Cleveland, and to everybody's surprise a compromise was effected. The demand for 47c. per ton was regarded as fundamental by the miners and was conceded by the operators, but countervailing concessions were made which, if the Hocking Valley operators, especially the Sunday Creek Coal Co., were correctly informed, must be regarded as equivalent to a 5c. reduction per ton.

However, the labor leaders loudly declared that there were "no concessions on fundamentals." On May 13 the trouble was ended after 13½ months of dispute. If we concede that the miners gained an increase from 44.61 to 47c., which is what they claim, we shall find it hard to believe that in the rest of their lives they will gain what they have lost.

The miners of eastern Ohio get a small tonnage. Let it be supposed that it amounts to 4 tons per day. It actually was 3.83 tons per man per day for the whole state in the last normal year, 1913. The increase the miners claim would be 4 tons multiplied by 2.39c., or 9.56c. per day—say 10c. If they earn \$500 a year or \$800 in 13½ months, it would take 8,000 days, or 32 years, to get back the wage lost. At best the rest of their working days will only yield them what they cast away, and at worst, taking the Sunday Creek Coal Co.'s figures that the miners lost and did not gain, the time expended in idleness may cause them a further loss of 20c. per day worked thereafter.

EASTERN OHIO ENDS ITS STRIKE AND CAUSES A LOCKOUT IN HOCKING VALLEY

But Ohio was not ready to get to work and renounce its unfortunate publicity, for the Hocking Valley operators felt they had a substantial grievance. When the Hocking Valley district signed, the miners put their names at the foot of the agreement, and the operators did not sign till after they had appended a clause requiring the union to demand of eastern Ohio a 47c. rate and otherwise unmodified conditions—that being the verbal promise of the leaders when the Hocking Valley operators approved of the scale offered.

So when the union conceded certain matters to the eastern Ohio operators, a lockout was discussed in southern Ohio. But this action was not immediate. The Hocking Valley operators took the matter carefully under consideration, and in the end it was only the Sunday Creek Coal Co. which stood out strongly for a new contract. At the end of June the Sunday Creek Coal Co. began to close its mines, and by the middle of the month nearly all its workings were shut down.

As a result, many men decided to seek work elsewhere, a considerable number going to nonunion districts. Others remained, depending on labor-union contributions and the somewhat grudging gifts from cities outside the coal field. The public showed that during the long-continued eastern Ohio strike it had spent all it was disposed to spend on the coal miners.

Only the Sunday Creek Coal Co. really maintained a lockout, as the other smaller companies opened their mines as soon as prices warranted. They were willing to work whenever and as long as the wage scale promised a profit.

In eastern Ohio there were many small strikes. The operators had mine tipples rigged up for lump-coal pay-

ments when they signed a run-of-mine contract, and a temporary arrangement had to be made by which certain percentages of slack were assumed to be present in the coal. This created trouble, as the miners asserted that the operators favored the ad interim arrangement and for that reason delayed the purchase and erection of scales. Probably the charge was occasionally justified.

Then again the rent charges were in arrears. The operators and miners disagreed as to the amount to be deducted at any one time for rent arrearages, and this was a cause of many short strikes. These matters rapidly corrected themselves, and differences were lessened by the advancing price of coal, which made the operators disposed to be conciliatory.

COLORADO, THOUGH PEACEFUL, HAS NOTABLE YEAR

When the year opened, Colorado was so far pacified that the governor was urging the removal of the troops, but not sufficiently quieted that it could stand a visit from the pacificators, Seth Low, C. W. Mills and Patrick Gilday, so they were asked to keep out of the state. The way in which they allowed themselves to be thrust into oblivion in the interests of the public reflects much credit on them.

But if they desired no advertising, Frank P. Walsh, of the Industrial Relations Commission, was of an entirely different kidney, and his questions to John D. Rockefeller, Jr., from Jan. 25 to 29 were of a character that alienated almost all the members of the commission from the support of their chairman.

At that early stage was clearly exhibited the magnetism of the younger Rockefeller, which is the outcome of his obvious sincerity. John R. Lawson, F. V. Hayes, Edward L. Doyle and even Mother Jones seemed attracted at first, only to realize that Rockefeller had a mind of his own. Discovering that he was not going to order submission of the Colorado Fuel and Iron Co. to the union, their attitude rapidly veered, especially whenever Rockefeller's absence removed the continued assurance of his good will.

The three Federal arbitrators on Jan. 19 called on the other operators of Colorado, drawing attention to the arrangement between the Colorado Fuel and Iron Co. and its men and advising them to put a similar plan into practice, but the reply was to the effect that the experiment was interesting, but likely to be unsuccessful.

Early in February the union began to despair of the Colorado situation, and it was announced that after Feb. 20 no more benefits to the strikers would be paid. The Colorado Fuel and Iron Co. was taking back all the men it could, but there were a number still idle, and so the Rockefeller Foundation undertook some improvement work in the vicinity of the mines with the sole idea of sustaining the men whom the union had abandoned.

The situation in Colorado was lost to sight till Frank P. Walsh reopened the hearings of the Industrial Relations Commission in Washington, trying to prove that John D. Rockefeller, Jr., had directed the strike, had written letters for Governor Ammons to the President and had laid plans to secure control of a number of papers and to finance the "Nation's Business," the official organ of the Chamber of Commerce—all of which was denied wholly or in large degree by Mr. Rockefeller.

Shortly after, John R. Lawson was convicted of murder in the first degree for his action in the Colorado strike.

It was not alleged that he fired a shot, but that he directed the attack on the deputies in which one man was killed.

On Aug. 24 the reports of the Federal Industrial Relations Commission were made. They were largely concerned with the situation in Colorado. The chairman, F. P. Walsh, and the three commissioners who represented labor made one report. Two commissioners representing the public made another, and the three representatives of the employers made a third. F. P. Walsh and those who reported with him favored opening the "closed camps" to the public and advocated that an inquiry be made as to what post offices were controlled by employees of coal companies.

Wherever throughout the industry there were no major disputes, the infrequent run made the men little disposed to start strikes for trivial reasons. Only in the latter part of the year, when business was phenomenally brisk, was there any general disposition to make demands of the operators in the bituminous regions. The anthracite region, which was normally prosperous the year round, had its troubles.

So did some parts of Kentucky, despite the infrequent run. There some of the companies were ill advised enough to ask their men to accept a reduction. If the men are asked to submit to a lower scale whenever times become slack, we have the disadvantage of low wages with short hours—a condition unbearable for the workmen. No one can blame the men for resisting and forming unions if they are to receive such unfair treatment.

No operator gains by cutting wages unless that sordid action is not general. And usually the cutting is done where the wages are already not up to the average standard. West Virginia is to be commended for failing at all times to yield to the pressure to cut wages despite the action in Kentucky and notwithstanding some minor reductions in central Pennsylvania.

✶

Recent Legal Decisions

Risk Assumed by Employees in Pennsylvania Bituminous Mine—Under the Bituminous Mining Acts of Pennsylvania, a miner who continued at work for a week after his request for crossbars and a buddy had been disregarded assumed the consequent risk of injury through falling rock. (United States Circuit Court of Appeals, Second Circuit, *Vagaski vs. Consolidation Coal Co.*, 225 Federal Reporter, 913.)

Right To Share in Profits of Coal-Land Venture—Under an expectation that it would take \$5,000 to finance a venture in coal lands, each of four persons agreed to contribute \$1,250 and to share equally in options taken. But when it developed that about \$8,000 more would be required to make the investment profitable, J., one of the members, refused to make any further contribution, and the amount was made up by his associates. Held, that on division of the profits J. is entitled to share in the profits only in the ratio that his investment of \$1,250 bore to the entire sum contributed by the four. (United States Circuit Court of Appeals, Fourth Circuit, *Jackson vs. Jackson*, 224 Federal Reporter, 888.)

Fellow Servant Rule in Kentucky—The rule in Kentucky is that no recovery may be had from a master for an injury to an employee not causing death resulting from the ordinary negligence of a servant superior to and having immediate control of or supervision over the servant. A mine motorman was not a "fellow servant" of a brakeman in the operation of a train so as to exonerate their common employer from liability for injury to the brakeman while the motorman was taking a trip to its destination, it appearing that the motorman, through whose negligence the accident occurred, had sole control of the trip after the brakeman directed its making up. (Kentucky Court of Appeals, *Baldrige vs. Consolidated Coal Co.*, 179 Southwestern Reporter, 18.)

The Coal-Briquetting Industry

By C. T. MALCOLMSON*

SYNOPSIS—Many improvements and enlargements have been made in briquetting plants throughout the country, but mainly in the West and Northwest. A decided advance has also been made recently in briquetting fine sizes of anthracite. The process now employed bids fair to solve this vexatious problem.

The past two years have marked a steady advance in the coal-briquetting industry in the United States. While the tonnage has not materially increased, the industry is on a much more substantial basis. The successful plants that have been properly built and financed are either enlarging or preparing to enlarge their output, while the badly designed installations have died a natural death and the promotion schemes have fallen by the wayside.

The Berwind Fuel Co., whose coal-briquetting plant at Superior, Wis., is the largest in the United States, was not long in discovering that a market for small briquettes existed that could not be supplied by the 13-oz. product it had been making. During the past year this firm has installed a new briquetting machine, known as the Komarek press, which is a distinct improvement on the regular Belgian roll type.

The Komarek press has a capacity of 30 tons per hr. of 2-oz. briquettes and has been in successful operation since last November. The Berwind company has found it necessary to operate day and night in order to supply the demand for large and small briquettes. Coal-tar pitch is used as a binder, of which the briquettes contain 6 per cent.

NIGHT AND DAY OPERATION IS REQUIRED

The impetus to the briquetting industry and the demand for small briquettes have required day and night operation of the Stott Briquette Co.'s plant at Superior. As a result of this increase in business, the Stott company has made preparation to double the capacity of its plant. A Belgian roll press of a capacity of 12 tons per hr. is now used to manufacture 2-oz. pillow-shaped briquettes out of a mixture of Pocahontas and anthracite screenings. About 9 per cent. oil residuum with an asphalt base is used as a binder.

The plant of the Standard Briquette Fuel Co., of Kansas City, Mo., in which a Rutledge press was installed two years ago, has shown a steady improvement in the quality and quantity of its product. The plant is running at its full capacity of 30 tons per hr. in spite of the adverse trade conditions in the earlier part of the season. The briquettes, which are made from Arkansas semianthracite coal, weigh 10 oz. each and contain 7 per cent. coal-tar pitch binder.

On the Pacific Coast there is a growing sentiment in favor of briquettes, although as yet there has been no increase in the output of any of the plants operating there. The Pacific Coast Coal Co. reports a greater diversity in its markets and a steadily increasing demand for its briquettes. The same condition prevails there as at the

head of the Lakes, so that the Pacific Coast Coal Co. is preparing now to install a Komarek press to manufacture small briquettes to take care of the demand for stove and range sizes of fuel. At the present time this company's plant near Seattle contains one Rutledge press, manufacturing 10-oz. briquettes at the rate of 30 tons per hr. California asphalt is used as a binder, the briquettes containing 5 per cent. of this material.

The Los Angeles Gas and Electric Corporation is producing merchantable briquettes out of the fine carbon dust washed from its gas. A modified brick press of a capacity of 15 tons per hr. is used. The briquettes are made without a binder and are allowed to cure in the open for 30 days before being shipped.

SEVERAL NEW PLANTS HAVE BEEN INSTALLED

In the Eastern and Southern States new plants have been installed. The largest is that of the Delparen Briquetting Co., at Parrott, Va. This plant, which has just been placed in operation, was originally designed to utilize a vegetable binder and produce a smokeless fuel by briquetting the low-volatile Virginia semianthracite coal mined by the Pulaski Coal Co., until it was demonstrated that coal-tar pitch would meet the market requirements. The plant is similar in design to that of the Stott company; it has a capacity of about 20 tons per hr. The briquettes weigh 2 oz. and contain 7 per cent. oil residue as a binder.

The Eggette Coal Co., of Trenton, N. J., has just completed a plant to manufacture at the rate of 5 tons per hr. anthracite boulettes, weighing about 1½ oz. each. A vegetable binder, of which molasses is the principal ingredient, is used, and the briquettes are baked for weatherproofing purposes. A plant of similar capacity and design is operated at Philadelphia by the American Coalet Co.

The American Coal Boulette Co.'s plant, at Phoenix, Md., is one of the older installations in this country. This plant contains a 10-ton-per-hr. Belgian roll press, manufacturing boulettes weighing 1½ oz. each, from Georges Creek coal and an asphalt binder.

The plant at Bankhead, Canada, built in 1906, is one of the pioneers in the industry on this continent. This plant now contains two roll presses of a modified Belgian type with a maximum capacity of 30 tons per hr. It operates 20 hr. per day during part of the year and has made over 600,000 tons of briquettes. The Colonial Coal Co., of Sydney, N. S., has two plants in operation, containing three Belgian presses with a combined rated capacity of 30 tons per hr.

ANTHRACITE IS NOW BEING BRIQUETTED

The manufacture of Pennsylvania anthracite briquettes has not been an unqualified success. Coal-tar pitch has been used generally as a binder, and the past year has seen the elimination of the last plants that have tried to market briquettes of this character. Out of this disastrous condition has grown a new process which undoubtedly marks a noticeable advance in the briquetting of this coal.

The General Briquetting Co., New York, is the licensee of a process, developed in Holland, by which liquid hydrocarbonaceous binders, such as oil and tar, are ground into

*Chicago, Ill.

the coal. The briquettes thereby produced meet all the requirements of a merchantable fuel to compete with domestic sizes of anthracite. A year was spent in adapting this process to American conditions.

The Lehigh Coal and Navigation Co. has been the first to utilize this new process. Its plant at Lansford, Penn., has been rebuilt to install the necessary equipment and in addition a Komarek press of a capacity of 15 tons per hr. For the past two months the company has been marketing anthracite boulettes made on one of its Belgian roll presses, using 5 per cent. oil residue as a binder.



Extracts from a Superintendent's Diary

It has been some months now since our county went dry, and most of our men have learned that it is possible to get along without drink. At any rate they do get along without it rather than go to all of the trouble that is required to obtain it. But one old toper, Mike Clancy by name, refuses to change the tenor of his ways, and in spite of all of the efforts of his neighbors and friends, as well as his wife, takes to his cups whenever the spirit, or spirits, move him and in consequence spends most of his time going for liquor or returning with liquor.

Upon several occasions some of the young jokers of our camp have tried to get the best of Mike, while his actions indicated that he was hardly in shape to take care of himself, but the success obtained in such adventures hardly repaid them from their trouble, and of late it began to look as if Mike was to be let severely alone in the future. Things are not always as they seem, however.

About seven o'clock this evening, as I was passing No. 7 drift mouth, I was surprised to see coming out Mrs. Clancy, leaning on the arm of Tom Hoskins, her son-in-law. From what I could catch of the conversation, Mrs. Clancy was in great distress over something that had just happened, while Hoskins was trying to console her. I began to fear that some one had met with an accident in the mine and was just on the point of making inquiry

when I noticed two of our driver boys also coming out from the inside, and they were convulsed with laughter. Then, before I had a chance to recover from my astonishment, a third group emerged from the pit mouth, and in the center of this, requiring the combined efforts of the entire group to keep him within it, whom did I behold but Mike Clancy himself.

Mike alone showed no desire to be the first one to speak. In fact he said nothing until the others had finished giving me an account of what had happened inside, then he burst out laughing and pointing to his better half remarked, "She can't see the (hic) joke yet (hic)."

It seems that Mrs. Clancy had continually warned poor Mike that unless he should stop drinking he would wake up some day in the presence of old Nick himself. Tom Hoskins, having heard these warnings given to Mike so often, decided that it would be an easy matter to make Mike believe that he really was in the presence of Old Nick if he could only find him at an opportune time.

Entering Mike's residence today, he found him sprawled out on the bed, dead drunk. He decided that the time had arrived. With Mrs. Clancy's permission Tom quickly gathered a crew of the camp's practical jokers and, accompanied by Mrs. Clancy, they took the sleeping victim into No. 7 drift and laid him down in sight of the ventilating furnace.

Then they all hid in a crosscut and waited for developments. The developments did not come as fast and furiously as they had anticipated. In fact they waited for nearly an hour before Mike made a single sound, and that only proved to be a groan uttered in his sleep. Mrs. Clancy had never been underground, and her teeth began to chatter in spite of their proximity to the roaring fire in the furnace. At last, however, Mike really did recover consciousness, and true to Tom's anticipation he jumped up with a start and addressed the Devil.

But his remarks were not according to anticipation. He said simply and without the least evidence of excitement, "Put me to work, (hic) Mr. Satan, where my old woman wont ever find me."

Ballads of a Coal Miner--XI

Written Expressly for Coal Age

• Brothers in Toil •

BY BERTON BRALEY

Dago an' Slovak, Bulgarian, Russ,
Austrian, Serbian, Pole,
Just a big polyglot sort of a muss
Minin' an' shovelin' coal.
Onct I was stickin' my nose in the air
Talkin' of "Hunkies" an' such;
Now I am steadily growin' aware
They are like me—pretty much.

Hunkies has children and Hunkies has wives
Just like the rest of us guys;
Hunkies must labor away all their lives
Keepin' right on till they dies;
Hunkies knows hunger an' sickness an' pain,
Worry an' trouble an' fret;
They've got a soul an' a body an' brain,
Hunkies is human, you bet!

*An' so I don't sniff at the Hunkies, not now, Austrian, Slovak or Wop;
For I must go on in the sweat of my brow an' work—like the Hunks—till I drop.*

Editorials

This Annual Review Number

It is not an easy matter to make this issue of *Coal Age* a bright and interesting-looking number. Statistics at the best are dry reading, but they are absolutely necessary to the intelligent conduct of an important corporation or an important industry. The United States Geological Survey issues a complete and accurate review in the fall of each year covering the preceding calendar year. However, early figures showing coal production, if only estimated, have a value that justifies the considerable amount of labor and expense entailed by *Coal Age* in compiling these data.

We apologize to our readers for the black appearance of this issue, but trust that the information printed will prove so complete that we will be forgiven. We particularly call attention to the different reviews of the various state mine inspectors, wherein are contained numerous suggestions that will be found of great value. Although we are printing 72 pages of editorial matter this week, we could not include all the important articles that were especially prepared for this review number. These articles will be printed in succeeding issues. Last week we mentioned that in this issue we would give a list of articles that we have prepared for publication. It is impossible to publish the long list of coming articles we had in mind, until space permits in our Jan. 15 issue. We will say, however, that next week, in addition to the statistical matter carried over, we will print a most interesting description of a "Modern Wash House for Miners." This article will be illustrated and will contain an itemized table of costs. Those coal companies that are expecting to build wash houses will find this article of much value. Another article next week will cover a "Mine Warehouse System." Companies lacking a proper system for the purchase, storage and issuance of supplies will not overlook this description of a successful and practical warehouse plan.

What Inspectors Could Not Do

Some of the inspectors at the meeting of the Coal Mining Institute of America were disposed to object to the statement that the workmen's compensation act was going to make the mines safer places than ever before. It was natural for some of the inspectors to feel that such an expectation arose from a belief that the inspectors had been remiss in their duties, but no one had any such idea. There are many things the inspectors have not done and could not do, for they did not have the compelling force of the law on their side.

Many a mine inspector has desired to see first-aid organizations started, but he could not enforce their introduction. As to this matter, the law was silent. It did not even require that certificated mine foremen or men seeking certificates should understand first aid. And consequently the inspector was quite powerless. A few like F. W. Cunningham in the Somerset district of Penn-

sylvania, James Taylor and John Dunlop in the Peoria district of Illinois and others doubtless overlooked have had much success in inducing such first-aid developments, but when the operators were indifferent, the inspector's enthusiasm met with the chilliest of receptions, and enthusiasm was all they had, for they could require nothing which the law they were to enforce did not require.

Then in the matter of mine tracks, to mention one matter among many, they were powerless. The operator could put on his headings light rail, mechanically unbonded, crooked and out of gage. As a result, derailments were frequent, and the inspector could say nothing. His power went as far as his code and no farther.

Now he can show the operator where he can save money by compliance with the new rulings and can point out to him that the loss of a reduced insurance rating will levy on the operator the equivalent of a fine for many things which hitherto the inspector could not prohibit by law. Where the shortcomings of the operator were of a kind the law could punish, the new rules will carry a heavier fine in all probability than any court would impose if the inspector carried the matter before it.

It is to the credit of the operators that they welcome the new law and are hoping to earn substantial dividends now out of their safety provisions. The new law does not burden them; rather it awards them for the good they do. It puts a premium on their provisions for safety and practically provides them with the wherewithal to make their mines safe. Hitherto the man who put in safeguards and employed many foremen to help his men did it out of his own pockets and almost at a loss. Now it begins to look as if the most profitable mine will be that most closely inspected and safeguarded, and many operators are beginning to realize that they will be drawing a dividend from some safety features which for months have been only an expense.

Safe mines like fireproof houses will spring out of the insurance feature. First-aid and mine-rescue corps will flourish out of the underwriting of mine risks as hook-and-ladder companies, fire engines, fire-signal systems, adequate high-pressure water supplies and fireproofing regulations have blossomed forth as the natural outcome of fire insurance. No wonder the mining public is becoming enthusiastic over the generous possibilities of the new compensation laws.

The Methods of Our Cousins

Perhaps William James and W. L. Morgan have a right in their letters published in our issues of Dec. 18 and 25 respectively to traverse the statements in the editorial of Nov. 6 on the output of British mines and are justified also in questioning Samuel Dean's suggestion that the root of the trouble lies in small equipment.

Mr. Morgan says that the small methods of the British miners are not so obvious in their equipment as has been charged, but he mentions other ways in which the tonnage

is restricted, and the reader will readily note that he has only replaced one form of smallness for another, without seriously disturbing the view well known and generally held that the equipment is not as large as it should be.

He states that "in all steam-coal mines the miner uses a coal pan to carry his coal from the face to the 'box' or car, to be loaded," that conditions largely prevent the use of mining machines and that wedge and sledge are used instead of powder in all the mines in South Wales except those in which anthracite is mined.

The transfer of coal from the face to the car in pans is a good way to waste time and to furnish needless labor. The trouble appears to be that the mine owner is too anxious to please his customer and give him large coal and is not careful enough to educate him and prove that excessively prepared coal is uneconomical.

Apparently he has not taught the purchaser, as he should, that small coal is valuable and economical when properly burned, or he would not require the miner to leave the fine coal in the mine. Not but what we desire to commend both the British and Germans for the excellent way they make their customers come to the mark and pay them prices for coal which give them a chance to profit.

It is a mistake to attempt to give a man more than he really needs. Thus, one Welsh operator cleaned his coal till it ran only 2 per cent. ash. He found out later that this fuel was being mixed in Belgium with sand before being made into briquettes. The law allowed such a large percentage of ash in the product that the briquetting firm, which was seeking to make a cheap article, added a large quantity of ash-making material to balance the ashless pitch and the lightly ash-laden coal.

It would have been better for the mine owner to have wasted less coal and sold a product higher in ash, but lower in cost. But he did not know where his product was going, and it was not until a complaint of his failure to comply with the guarantee made him investigate that he found how he had been wasting good coal and much labor for no real purpose. Of course the use of pick, wedge and sledge to bring down coal is slow and ineffective, but it is questionable if it is right to mine coal at all in a place not made so safe that high-grade, permissible explosives, such as are used in the United States, may be employed: for, by the way, the explosives approved by the United States Bureau of Mines have passed more severe tests than the explosives which are "permitted" in England.

Electric mining machinery and electric locomotives, which Mr. Morgan says are barred from gassy British mines, are not necessary even if the horse is not used as motive power or if mechanical transmission proves inadvisable. Compressed air still remains as a choice.

There is almost as great danger of an explosion in a mine worked by pick, wedge and sledge and without powder as if permissible explosives were permitted, for a boulder of sulphur struck by a pick or a wedge battered by a sledge may make a spark which will ignite gas. In South Wales falls of rock apparently have struck sparks and caused explosions.

The important matter is ventilation and still more ventilation, and this can be improved immensely when electric lamps are introduced, which burn safely in any current no matter how speedy. Even if it does not cool the mines, it will at least make them less sultry.

Strange to say, not only our British cousins, but also the Germans, the French, the Belgians and all other Europeans produce less coal than is obtained in the United States and the British colonies except India. This fact suggests that Europe's methods are not the best from the point of view of output, and it also convinces most of us that Samuel Dean is doing his former friends and associates a favor in trying to prove that better work can be done if some old ideas are thrown to the winds.

There are gassy mines in the United States where electric machines and electric haulage are tabooed, but the miner's output in them measures up well with the best. There are thin-bed mines with coal between 30 in. and 32 in. which still manage to run in competition with others and where men maintain almost the American average production. So low coal and gas are probably not the main causes of the small per capita output of Europe.

As a matter of fact, it is not only in mining that excessive conservatism reigns abroad, but it is found throughout the gamut of industry in Europe. As for the claim that ventilation in Great Britain is all that is desired, it may be permissible to quote the British authority, H. Stanley Jevons.

Under "Abnormal Places" in his book on the British coal trade he says, "Insufficient ventilation that makes a man easily get hot and tired, besides adding to the danger, is another way in which the management may be responsible for reducing a man's output." He repeats this in another place.

While it may as well be admitted that ventilation in some American mines is grossly deficient, it does not exhaust the workmen by reason of the excessive heat resulting. In this connection it may be permissible to mention that M. Taffanel, who made an inquiry into an English explosion, found that the air current in the mine was quite defective. Mr. Morgan endeavors to show that the ventilation is always satisfactory and that the high temperature is not even in part due to its inadequacy, but authorities do not appear to support him.

Child Labor at the Anthracite Mines Under New Law

The Lehigh Valley Coal Co. seems to be the only large coal-mining company in the anthracite region which is not affected by the new child-labor law of Pennsylvania and perhaps it is the only coal producer in that region, large or small, which will be able to conduct its business without modification, because it employs no boys under 16.

The provision of the law most seriously interfering with the production of anthracite is that which limits the hours of work for boys between 14 and 16 to 51 per week. Eight hours of this must be spent in school, though the law is not interpreted to mean that this time must be spent in school every week. It is held that the intention of the law is that enough time must be devoted to study each year to be equivalent to 8 hours per week during the school year.

Anthracite must be cleaned, and in the present stage of the industry some hand-picking is necessary. Boys are employed for this work because they can do it as well as men, if not better, and for lower wages, at the same time leaving the men free for the harder work at the mines. The breaker work is not so hard that the boys are injured by it either in their health or their development.

Discussion by Readers

Handling Explosives in Mines

Letter No. 4—I am reminded in reading *Letter No. 3* on this subject, *Coal Age*, Nov. 6, p. 769, that there is nothing in mining practice that requires more care and experience in handling than the explosives used in blasting. Black powder is commonly used for this purpose, and the utmost care is required, both on the part of the man who serves out the powder and the one whose duty it is to take it into the mine. The precautions commonly urged with respect to handling black powder are that no open lights nor matches should be allowed in the place where the powder is stored and that every means be taken to prevent the striking of sparks, which might cause the accidental ignition of the powder.

Notwithstanding these well-known precautions, I have seen men going into the powder house with their pipes in their mouths. Seemingly they are unconscious of the danger to which they expose themselves and others in so doing. Powder taken into the mine should be in charge of a duly authorized and competent person. Where electricity is used in the mine, it is well to cut off the power when the powder is being conveyed from the shaft bottom to the working faces.

This recalls to my mind an incident that happened in a mine where I was working. It had been the custom to bring the powder into the mine during the noon hour, when the power was cut off. It happened one day that the man in charge had forgotten to shut off the power, and a loose wire that had escaped previous notice was hanging down over the roadway and in contact with the trolley wire. The driver whose duty it was to bring in the powder had only two kegs in the car at the time. When the wire came in contact with the car, the electric current, transmitted through the iron rods and braces, threw the driver from his perch to the side of the road. Fortunately the powder rested on the dry wood of the car and no further damage was done, but the incident impressed me with regard to the danger from this cause.

COMPRESSED POWDER CARTRIDGES

While speaking of powder, I want to mention a kind that is used quite extensively in Great Britain. It is black powder compressed in a form ready for use and has the advantage that no loose powder can be spilled when charging the hole. In this form the powder is safer and more easily handled, because the miner is not obliged to make up his cartridge, which is the common practice in this country. Also, it is easier to judge of the proper quantity of powder for charging a given hole.

In this connection it will be of interest to mention a method often employed for waterproofing a wet hole. The miner first endeavors to find the part of the hole where the water comes in. When this is found, the hole is filled with good fireclay to a few inches beyond that point. A rammer is then put in that fits the hole quite snugly. By striking the rammer with a sledge or heavy hammer, the clay is forced into the crevices of the coal through

which the water finds its way into the hole, and by this means the hole is made water-tight. I have seen some troublesome springs of water stopped in this way.

I very much prefer the firing of shots by electricity. There is then less danger of accident to the shotfirer, the air is not contaminated with the smoke of the burning fuse and there is less chance of a missed shot.

FIRING GAS BEHIND A STANDING SHOT

I want to speak of an experience that many miners have had on going back to a shot that has been fired. In one instance I found the shot had not broken down the coal, which was still standing, although the blast had opened wide cracks from which smoke seemed to be coming. This smoke was quickly ignited by the light of my lamp when I brought it close to the crack to examine the shot. As a result, a slight explosion occurred that forced the coal out. It made me think that this has often caused a dust explosion. For instance, suppose there was an entry 12 ft. wide where four or five shots are to be fired. The first one or two shots may be all right, but perhaps the third only cracks the coal and the following shot ignites this gas, producing an effect like a blownout or windy shot and possibly causing a dust explosion.

WILLIAM JAMES.

Mystic, Iowa.

✂

Paying for the Mining of Coal

Letter No. 1—In the editorial, *Coal Age*, Nov. 20, p. 848, entitled "Paying Mine Workers Both for Time and for Output," the statements and conclusions expressed are apparently so at variance with the commonly accepted principles of business transactions that I was compelled to read and study the article several times in order to thoroughly comprehend the reasons for the conclusions and understand the premises on which they are based. I had hoped thereby to discover some economic principles that would prove of material benefit to both employer and employed.

After doubting the correctness of the general opinion that "the wage based on performance—the piece or ton wage" makes for efficiency, the article concludes that the employee "retains too much of the profit for his own good" and yet "is really the loser." In other words the more a man makes the less he has; and conversely the less a man makes the more he has. This paradox is partly explained, however, by the statement, "A certain definite wage for a certain amount of output is eventually set," from which it is inferred that when a miner's daily earnings reach a certain limit, it would be to the employer's interest either to prevent his putting out more coal or to curtail the price of mining. I have known isolated cases where the greater efficiency of the worker, longer hours of labor or more favorable conditions would enable him to produce a greater output than his fellow workers; and as a result of envy or jealousy, obstacles would be put in his path that would reduce his output. But this

was more the work of the immediate boss than of the company that employed the man. I have never known such a proceeding to be followed with respect to the entire body of miners. If such were the case, the act would probably be ascribed to market conditions.

PRINCIPLE CONTROLLING PROFITS IN MINING

The question of profit in coal mining or any other productive industry is determined by the cost of production as compared with the market value of the product. In the mining of coal the price per ton is an important feature. In organized fields this is agreed upon by a joint conference of employers and employees, while in other districts it is fixed by the employer alone. In the former case the market conditions form an important factor in fixing the wage scale, while in the latter the question of retaining the necessary labor enters largely into the problem. Otherwise the price of labor in some instances would be fixed so low as to be unsupporting.

As suggested in the article, the initial cost of the coal—the price paid for mining—cannot be reduced in honesty to the miner; and the employer's total profits, aside from economizing in various ways, must be determined by encouraging every miner to put out as large an amount of coal as the condition of the market will warrant. It is immaterial, so far as the operator's profits are concerned, whether the total output of the mine is the work of a large number of miners or not, so long as that output meets the demands of the market. Any deliberate action on the part of the operator to restrict the output of the individual miner when the market demands the coal or his failure to employ the most efficient means to secure a maximum output would be an indication of business incompetency and financial suicide.

TON PRICE AN INCENTIVE TO INDUSTRY

To deprive the coal-mining industry of the principle of the ton price for mining would be, in my opinion, to rob it of the greatest incentive to efficiency. Every coal miner is a contractor working under special conditions. His earnings should be made to depend on his devoting his best energies and skill to produce the largest results. There is of course involved the element of chance, as determined by the variable conditions incident to mining. The desire to excel in any undertaking makes real progress possible, and the miner should be given this incentive to work. Deprived of the chance to excel and obliged to conform his efforts to a routine destroys his interest in the work, however large may be the compensation. The adoption of such a system as suggested in the article would mean greater supervision, which again means increased expense. This is proved in every industry where dayworkers are employed, when comparison is made with the results obtained in piece-work or, in mining parlance, "ton work."

THE MINIMUM-WAGE SUGGESTION

In conclusion the article states that "a combination of a minimum wage plus a lower rate of remuneration per ton of output is the logical way to pay for every operation around the mine." I want to say that the "minimum wage" is designed to meet two conditions—as an abnormal condition of place or work; and the need to provide a certain compensation for reduction of productive power under normal conditions. The latter of these two con-

ditions requires little consideration, as it is agreed that an employer will not hire men who by reason of age or disease are incapable of earning the minimum wage. The first condition, however, will require supervision and increase the expense, which means a definite loss.

In contrast to the claims made in this article, I would say that the greatest efficiency and profit will be obtained on the basis of the present ton price for mining. The producer is then paid for his work and not for his time. Less supervision is required, and the entire operation much simplified, which tends to produce more amicable relations between employer and employed, whose interests are common. I fail to comprehend how a lower rate per ton, added to the minimum wage, could be applied to the various classes of labor employed in the mine. I would be glad to have this point explained more in detail and a way pointed out as to how this principle can be applied to the present class of dayworkers in mines.

—, Penn.

A. M. INER.

✱

Efficient Mine Foremen

Letter No. 17—One of the most important adjuncts to the efficiency of mine foremen and their assistants is the notebook that every foreman should carry. In his daily rounds among the men a foreman sees many things and learns many facts that he could not be expected to recall always at the proper time, and the notebook will help to jog his memory.

The foreman gives many instructions to the men that if noted down at the time, would stand recorded as evidence that such instructions had been given. Such notations would furnish valuable testimony to the efficient work of the foreman and might serve to exonerate him from all blame for an accident due to the neglect of a miner to obey an order promptly at the time it was given. When material is needed, it should be noted at once in the book, together with the condition of the place where it is needed and any plans or work needed for further development. New ideas should be jotted down at the time they occur to the mind, to be worked out in detail at leisure.

THE NOTEBOOK A VALUABLE RECORD OF WORK

Work is always planned more effectually when one is able to compare it with a former experience, instead of depending upon what appears at the time to be theoretically correct. If a notebook carried by the foreman every day is kept in the form of a journal in which note has been made of the important details in each case, the record would prove of great value for future reference when dealing with similar cases. It is by such careful study and comparison that one gains a more accurate knowledge of the work in hand that is so important in mining practice.

Again, if a list of the important things to be done during the day is noted in the foreman's book, the work will be accomplished more systematically and effectually in the order of the relative importance of the different matters noted. It frequently happens that important work is not done because the necessary men are not available at the time, and later when the men are at hand the important matter is temporarily forgotten and they are put to work elsewhere on a job of less importance.

The notebook would form a valuable record of the expense of laying a new switch, hanging a door, building

an overcast or doing other similar work required in the mine. Such records would greatly assist the mine foreman in making future estimates on any proposed work and would give greater weight to his suggestions and recommendations.

The simple statement in an assistant foreman's daily report, as given to the mine foreman in charge, to the effect that all places in his district have been examined and found clear of gas is not sufficient. An efficient foreman will require that everything of importance shall be noted down and reported to him by his assistant. Such reports should show any poor work on the part of miners, lack of obedience, troubles in the mining or loading out of the coal, evidence of squeeze, faults encountered or heavy falls of roof, etc. Too often it happens that the really vital things do not come to the ears of the foreman, simply because the assistant did not think to mention it in his report at the close of the day. The notebook would obviate this difficulty.

FORNEY L. PARKER.

Joliett, Penn.

Letter No. 18—Many writers have discussed the question of efficient mine foremen almost wholly from the standpoint of ventilation. Although ventilation is possibly the most important factor with which the mine-foreman is confronted, there are other matters that demand consideration. Indeed, a man may be an expert on ventilation and still be a hopeless failure as a mine foreman. The mine foreman is expected to keep the tonnage up and the costs down, to promote safety and effect pleasant relations between operators and miners. The man who is capable of bringing about these conditions can lay claim to the title of efficient mine foreman.

ECONOMIC DISTRIBUTION OF WORKING PLACES

In order to keep the coal moving from the mine to the tipples it is important that the working places bear a proper relation to each other. For example, assuming that two haulers can serve 50 loaders, the mine should be so arranged that each hauler has his 25 loaders to serve. If, however, 35 loaders are working on an entry that is widely separated from another on which 15 men are working at maximum speed, the hauler on the latter entry will be idle nearly half of the time, while the one serving 35 loaders on the former, though always busy, cannot haul away the coal as fast as it is mined, and the men on that entry are idle a portion of the time. I admit that ideal conditions are not always possible, but it is the duty of the foreman to make them as nearly ideal as it is in his power. It is not always feasible to work the exact number of men a hauler can serve in the same territory. But it is many times possible to have the underpopulated district near enough to the overpopulated district, so that the hauler in the former can help out in the latter.

ATTENTION TO VARIOUS DETAILS IMPORTANT

In machine mines it is important to see that the places are cut promptly. While this matter is frequently arranged by the haulers and machinemen, a little oversight by the foreman is often helpful, especially if the men lose much time waiting for the machine. The installation of a new machine will often increase the tonnage and decrease the cost per ton. The foreman may not always be able to get what he orders, but that will not excuse him from recommending whatever he believes to be needed.

The haulage system demands the constant attention of the foreman. Good track is essential. A motor occasionally off the track will cause delays that would justify a considerable outlay to remedy the trouble. But this is not generally necessary. It must be remembered that it is less expensive to maintain good track when once laid than to keep up poor track. The importance of this maxim is hard to overestimate. I know at least one company that owes its success in working a mine under unfavorable natural conditions to the maintenance of good track.

The mine foreman must also give attention to the drainage of the mine. Muddy places or wet and slippery tracks mean much wasted energy of men, mules and motors. A careful study of conditions will often reveal an easy and inexpensive way to remove water from a mine. The natural conditions of the mine may permit water to flow to a central point by cutting a few ditches or laying a small amount of tiling. The foreman should avoid the necessity of rehandling water, which when once taken up by men or pumps should be disposed of permanently.

Timbering is another matter that the foreman must watch closely. Systematic and adequate timbering means reduced costs, high production and safety. Frequent falls are expensive, not only on account of wages paid for their removal and the repairing of broken wires, track, etc., but also because of the delay caused thereby.

PRACTICAL MEANS OF REDUCING COST OF OPERATION

In his efforts to reduce costs the efficient foreman will not try to get along with fewer daymen than are actually needed, but will, instead, employ an adequate force of timbermen, tracklayers, wire hangers, etc. While it is admitted that it is unnecessary to maintain constantly a maximum force, there is always work that may be done with advantage in cleaning tracks, opening waterways, moving supplies, etc.

The efficient foreman will give a part of his time to the proper distribution of supplies. While the purchase of supplies may not be a part of his duties, the purchasing department is largely governed by the recommendations of the foreman. Timber, rails, wire, etc., should always be distributed in their proper places and in suitable quantities. Delays caused by having to wait for material are in most cases inexcusable. Not only should larger material be kept on hand but small supplies, machine parts, bolts, nails, tools, etc., should always be available and ready for use. This will often prevent patched-up jobs that must only be done over again. But while keeping such adequate supplies at hand, the foreman must also guard against waste. Much mining material may be used again, after it has served its original purpose. Such reclamation of material is one of the tests of efficiency in a foreman. This test becomes more severe as the mine nears completion and retreating work begins. A foreman of my acquaintance is prouder of his record in reclaiming all except one iron rail when his mine was abandoned than the high tonnage he was able to secure while the mine was operating at its highest capacity.

The points I have brought out are, I believe, both practical and important. If a foreman is successful in all of these, he has traveled most of the distance on the road to efficiency. It only remains for him to use judgment in laying out the mine with an eye to future as well as present requirements. He can afford to sacrifice a lit-

the tonnage in the present in order to secure added returns in the future. He must use sound judgment in making permanent constructions and improvements, doing each well to avoid frequent repairs and to promote safety.

A mine foreman must strive to eliminate friction in his personal relations to the men in his charge, treating all employees and their representatives with respect and fairness. He is the connecting link between his employers and the men, and his influence should be used to see that each side is treated justly. He must use care in selecting all his subordinates, not only his immediate assistants, but the boss tracklayers, haulers, timbermen, etc. They must be men on whom he can rely to do their work in a satisfactory manner. He must keep posted on the best mining practice and be ready to take advice from the highest and the lowest.

GEORGE N. LANTZ.

New Straitsville, Ohio.

Handling Cars on Pitches

Letter No. 4—Conditions in the mines of the Roslyn coal field with respect to the pitch of the seam are much the same as those described by Mine Superintendent in his inquiry, *Coal Age*, Oct. 23, p. 687. In some of the mines the pitch is sufficient to run the coal from the face to the gangway in chutes lined with sheet iron. In other mines the cars are taken to the face. Formerly, in a few instances, the cars were taken part way up the room and loaded with coal that was run down a chute from the working face. At present when the chutes cannot be extended to the gangway because of insufficient pitch in the seam, the cars are taken to the face of the room.

The coal varies from 4 to 5 or 6 ft. in height, but is generally too low and in many places too steep for mules to be used to advantage. The present method of making the descending loaded car pull up the empty is much more economical, as it does away with mule and driver. The miner in the room lets the car down himself with little trouble, unless the pitch is too flat, when it may be necessary to push the loaded car; but the use of light steel instead of wooden rails usually overcomes this trouble.

SYSTEM USED IN THE ROSLYN COAL FIELD

The system described in the answer to this inquiry is the one in general use in this field, but the omission of several minor points may prove perplexing to a person installing it. The cars used here hold from one to two tons. Two cars are coupled together with clevises, or coupling links and pins. Instead of a clevis, a plain iron link fastened to each end of the cable will facilitate the work of the switcher. As the motorman pulls the empty trip in the entry, the switcher cuts off a car at each room and, after coupling it to the link on the room cable, whistles to signal the miner to lower his loaded car.

The room cable should be of such a length that the empty car can be coupled to it when standing on the room switch just off the main-track rails. This switch is level and has fixed points, so that the switcher can easily handle the cars. The switch for the double track in the mouth of the room has movable points, or spring latches, about 2 ft. long.

To fasten the iron coupling link to the cable, about three feet of the end is laid back on itself and the link is held in the loop thus formed, the end being fastened

by wrapping the cable with a figure-8 bandage, using for that purpose 2-in. strips of 20-oz. duck or brattice cloth or canvas. The long end of the cable is neatly coiled and tied together with similar strips of ducking or canvas. The iron link on that end is held in a loop formed by bending the cable back on itself and again fastening it with 2-in. strips of canvas as before. This method of fastening never gives any trouble, it does not rust or break and can be easily removed or replaced.

To keep the car from running down the incline wooden chucks made of 4x6-in. stuff about 1 ft. long and beveled at one end are placed against the car-wheels. Also the front wheels of the car are usually run over the ends of the rails at the top of the incline so as to lower that end of the car, which makes it more convenient for loading.

THE HEADSHEAVE AND ITS FASTENING

In our arrangement the headsheave or wheel is held in a clevis, or V-shaped piece of 3x1/2-in. iron, by a bolt that passes through the center of the wheel. Iron plates 1/8 in. thick are riveted to the clevis on each side, so as to form a substantial frame that will stand hard usage. The plates are held together by bolts passing through sleeves, cut from 1/2-in. iron pipe, which serve to keep the plates a fixed distance apart. The plates serve the purpose of protecting the miner by preventing him from getting his fingers caught between the rope and the wheel. The plates only cover half the wheel, so that it is possible to use a brake-stick between the clevis and the wheel for the purpose of controlling the movement of the cars.

The cable used in this field is 5/8 to 1/2 in. in diameter. A short length of chain is passed through the clevis and around the wheel post to secure the wheel to the post. One end of the chain is provided with a hook having a narrow opening wide enough to slip over a link edgewise, which is a convenient method for fastening the chain. Another method is to form a circle of a 12-ft. length of 1-in. cable by twisting the ends of the strands together and then doubling the coil so as to make it about 2 ft. in diameter. This is pulled out flat to form a double loop and is passed around the post, one end being slipped through the loop at the other and held by a short iron bar passed through the loop. The clevis of the wheel passes through the other loop. If the pitch is especially steep, it may be necessary to take an extra turn of the cable over the wheel to prevent its slipping when the brake-stick is used.

PLAN OF DRIVING THE ROOMS

In the system I have just described, the rooms are driven about 24 ft. wide with 24-ft. pillars between them. Another system used in the Roslyn coal field is to drive the room necks off the entry about 48 ft. apart for a distance of 40 ft., when they are holed through and driven up as a double room. The system then employed is that described by Edward H. Cox, *Coal Age*, Nov. 20, p. 855. In the Roslyn field the pitch is too steep for mining machines to go up to the face of the rooms under their own power. When machines are used they are hooked on the end of the cable, taking the place of the empty car. Then, by the use of its own power assisted by the counterbalancing weight of the loaded car, the machine is able to reach the face of the room.

RALPH W. MAYER.

Roslyn, Wash.

Inquiries of General Interest

Workmen's Compensation Law

Will you kindly publish in *Coal Age* the new Workmen's Compensation Law that goes into effect Jan. 1, 1916? I am operating a small mine and employ a varying number of miners, say from 10 to 50 men. I would like to ask, How can I have these men insured under the law when in some months we have as many as 10 or 20 men quit and, again, we hire as many more? Are we required to pay so much per man at the start?

I would also like to ask if the insurance includes my mine foreman and myself while working in and about the mine? I may say that I am operating this mine on a contract for another man, paying him a royalty on the tonnage mined and hiring my own men. Will I be compelled under the new law to keep a mine foreman who has a certificate or can I hire anyone to act as foreman in the mine? Also, are the men insured required to submit to an examination? This information will be much appreciated by myself and others in similar circumstances.

New Florence, Penn.

THOMAS HARRIS.

A pamphlet has been issued recently by the State of Pennsylvania, containing the Workmen's Compensation Act, together with several other acts bearing on the compensation of employees for injury or the awarding of death benefits in cases of fatal accident. Free copies of this pamphlet may be obtained by writing the Bureau of Workmen's Compensation, Department of Labor and Industry, Harrisburg, Penn. The acts are of too great length for publication in *Coal Age*.

Replying to the questions asked by the correspondent, we would say that it is optional with both operators and all employees whether or not they elect to work under the compensation law and accept the conditions and requirements of art. 3 of the act. But any operator or employee who does not wish to accept the provisions of art. 3 of the act must give notice in writing, the one to the other, at the time of hiring and must also file a copy of such notice, with proof of its service on the other party, with the Bureau of Compensation within 10 days thereafter and before any accident has occurred for which a compensation benefit may be expected. Failure to give such notice on the part of either party to the contract will constitute an acceptance of the provisions of art. 3.

Following the acceptance of the act, the employer is required by law to insure the payment of compensation under it in the State Workmen's Insurance Fund or in any insurance company or mutual association or company authorized to insure such liability in the state, or to furnish the Bureau of Compensation evidence of his financial ability to pay such compensation to his employees. The law provides further a schedule of compensation for injuries resulting in partial or total disability and specifies the basis of computing death benefits to be paid to the dependents in case of a fatal accident. Notice of claim for compensation for injury or death must be given by

such claimants to the employer, in writing, within 14 days after the accident.

The amount of insurance or the extent of the liability of the employer is based on his average payroll for the year, and the rate of insurance or premium to be paid is fixed by the bureau or the insurance company or mutual association in accordance with the kind of employment and the character and condition of the property or premises where employees must work.

The law contemplates a blanket insurance and not individual policies. It is therefore immaterial who the person is that is injured or killed, providing he was at the time acting as a servant or employee of a person or company operating under the act. A mine foreman is such an employee. The employer himself, although acting in the capacity of an independent contractor, is not such an employee, and in case of accident has no claim for indemnity by reason of the insurance he has taken out for the men in his employ. In the meaning of the law an employer of labor cannot be his own employee.

In regard to the employment of a foreman who holds a certificate of competency, as stated in the previous issue, page 25, the new law gives the operator the privilege of employing either the holder of a certificate of competency to act as mine foreman or a man who in the operator's judgment is equally competent with such certificated person to fill that office.

In regard to the question of a medical examination being required, inasmuch as the insurance is not written on individual policies there is no such examination made of the men insured. However, in order to determine the extent of the resulting disability in case of a nonfatal accident, the insurance company or its representative may demand a medical examination, which would be very proper under the circumstances.

✱

Electric-Signal System

We are about to install at our mine a stationary electric haulage crab and would like to ask what signal system it would be best to adopt to enable the man riding the trip to signal the engineer operating the crab at the mouth of the mine. As the feed line is already extended into the mine to the end of the haulage road, I would prefer to use an electric signal system if this can be done.

A TIMBERMAN.

Caldwell, Ohio.

The usual method employed for signaling the engineer in mine haulage is to run two small parallel wires, 4 or 5 in. apart, the entire length of the haulage road. These wires are supported on the timbers at the side of the road or attached to supports fixed in the rib. If the feed wire carries direct current or if the signal is that of an electric bell, the better plan is to employ the current derived from a few wet cells. It is possible but not advisable to step down the alternating current of a feed wire for signaling by use of a transformer.

Examination Questions

Miscellaneous Questions

(Answered by Request)

Ques.—Define the term "squeeze" as applied to coal mining. What would you do in case a squeeze occurred in an operation under your charge, and how would you plan so as to avoid one in the future?

Ans.—The term "squeeze" describes the effect of a more or less general movement of the overburden in the workings of a mine, owing to an insufficient support given to the roof by pillars of too-small dimensions. In other words too large an area of coal has been extracted in the first working, and too little pillar coal has been left for the support of the roof.

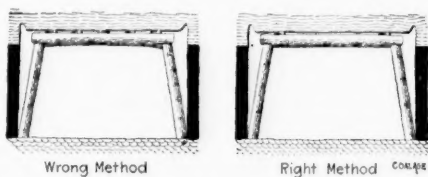
The remedy for a squeeze already under way is to induce heavy falls of roof in the path of the squeeze by the rapid extraction of pillar coal and the withdrawal of all timber that remains standing in abandoned places. Whenever practicable, shots should be placed in the roof so as to break the strata over the entry pillars in abandoned places that still remain open. By these means a general subsidence of the overburden is effected, and its weight made to rest on the floor or on the waste stored in the seam.

In order to avoid the recurrence of a squeeze in the future, larger pillars of coal should be left for the support of the roof over all entries and rooms. Also, care should be taken not to leave any timber standing in abandoned places and to induce falls of roof in all such areas.

Ques.—Show by a sketch the proper manner in which to erect a collar with two legs.

Ans.—The accompanying figure shows both the wrong and the right methods of wedging a timber set consisting of a collar and two legs. As shown in the figure, it is wrong to drive the wedges in the center of the collar or in such a manner as to distribute the roof pressure along the entire length of the collar. In the method shown on the right the wedges are driven over the collar just inside of each leg. In this position of the wedges the roof pressure is transmitted to the legs without subjecting the collar to a bending stress, as would be the case if the wedges were driven at the center.

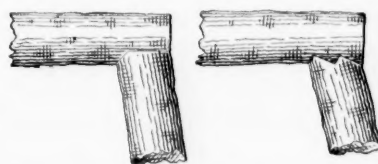
To erect such a frame suitable notches are first cut in the under side of the collar, the inner end of each notch being beveled. The upper end of each leg must be cut on an angle corresponding to the inclination of the leg, which should be about 2 in. to the foot. The legs must also be cut with a bevel to correspond to that of the notch in the collar. The two legs are first stood one on each side of the entry, leaning against the rib. The collar is then lifted on the man's shoulder, and each end in turn is rested on top of its leg. Before standing the legs, however, a good foothold for the posts should be



cut in the floor. When the frame is in position, the wedges are driven tight with a sledge or hammer.

Ques.—Show single- and double-notch timbering and explain when one kind is to be preferred to the other.

Ans.—The accompanying figure shows the most common form of single- and double-notch timbering used in an ordinary timber set for an airway. The single notch



SHOWING SINGLE AND DOUBLE NOTCHES IN MINE TIMBERING

is used where the timbers are chiefly designed to support the roof pressure and are not subject to any particular side pressure.

The double notch, shown on the right in the figure, is sometimes preferred where there is a considerable side pressure, this form of notch giving a greater bearing or resistance to overcome the same, but being more expensive to make.

Ques.—An airway 7x6 ft. in section is passing 28,000 cu.ft. of air per min.; what quantity will an airway 5x5 ft. in section pass, no length being given?

Ans.—It is usual to assume in this case that the length of the two airways is the same, but the question should state whether the pressure or the power remains constant or is the same in each airway, as the results will differ in the two cases.

Assuming the same pressure for each airway, the quantity of air in circulation varies as the expression $a\sqrt{a/o}$, which is the pressure potential for the airway. Then, finding the pressure potential for each of the given airways, we have

$$\text{Airway } 7 \times 6 \text{ ft., } a\sqrt{a/o} = 42\sqrt{42/26} = 53.38$$

$$\text{Airway } 5 \times 5 \text{ ft., } a\sqrt{a/o} = 25\sqrt{25/20} = 27.95$$

Then, since the quantity ratio is equal to the potential ratio, we have

$$\frac{Q_2}{Q_1} = \frac{Q_2}{28,000} = \frac{27.95}{53.38}$$

$$Q_2 = \frac{28,000 \times 27.95}{53.38} = 14,660 \text{ cu.ft. per min.}$$

Again, assuming the power on the air is the same in both cases, the quantity of air in circulation varies as $a/\sqrt[3]{o}$, which is the power potential for the airway. Then, finding the power potential for the two given airways, we have

$$\text{Airway } 7 \times 6 \text{ ft., } a/\sqrt[3]{o} = 42/\sqrt[3]{26} = 14.177$$

$$\text{Airway } 5 \times 5 \text{ ft., } a/\sqrt[3]{o} = 25/\sqrt[3]{20} = 9.21$$

Then, since the quantity ratio is equal to the potential ratio, we have in this case

$$\frac{Q_2}{Q_1} = \frac{Q_2}{28,000} = \frac{9.21}{14.177}$$

$$Q_2 = \frac{28,000 \times 9.21}{14.177} = 18,190 \text{ cu.ft. per min.}$$

For the same power on the air, the reduction in quantity is not as great as for the same unit pressure.

Coal and Coke News

Harrisburg, Penn.

Alarmed by the difficulty of supplying the growing demand for coal it is reported that many dealers throughout the state have posted notices, that beginning with Jan. 3, prices of all classes of anthracite would be advanced 25 cents a ton to the consumer.

This increase will apply alike to pea, nut, egg, stove and broken. No figures can be predicted with regard to bituminous coal, for the bituminous situation has run wild.

Decision to advance prices came to a head through publication of new price lists by the large companies, in which all prepared sizes of anthracite are raised 10 cents a ton to wholesalers and 5 cents a ton on pea and buckwheat for shipment. Combined with this is an alarming situation generally. The mines now are operating with about 60 per cent. labor, the railroads are having difficulty in supplying cars and the probability of strikes at the mines following the termination of wage agreements intensifies the condition.

To offset the increase announced by the large operating companies, the 2½ per cent. added to bills to comply with the state tax is eliminated. This means that the retailer will pay no more for his coal at the mines, but it destroys all chances of a later refund in case the 1915 tax is declared unconstitutional.

The G. B. Markle Co. which operates in the Lehigh region has figured out that the cost of insuring mine workers under the new workmen's compensation act will be 5 cents a ton instead of the 2½ cents per ton figured by impartial mathematicians. Accordingly this company has posted notices of 5 cents being added to the cost of each ton of coal. It is said that some of the larger companies look on the Markle company estimates as being modest, they figure the cost of insurance anywhere from 6 to 10 cents per ton.

It is thought by many that the anthracite situation is not nearly so serious as the bituminous shortage. It is predicted here, that the worst coal famine since 1906 will occur in the bituminous coal fields.

It is stated that a shortage of bituminous coal would mean an extra rush of pea and buckwheat coal by plants of the country.

PENNSYLVANIA

Anthracite

Port Griffith—The Ewen Breaker of the Pennsylvania Coal Co. at Port Griffith recently resumed operations, 600 men and boys being employed. This breaker is said to be the last word in breaker building. The Ewen breaker was totally destroyed by fire Dec. 11, 1914, and the present breaker like the fabled Phoenix, has arisen from the ashes. The new building is made of concrete, and is absolutely fireproof.

Wilkes-Barre—The Susquehanna Coal Co. recently announced the appointment of Dr. J. N. Maurer as chief of the department which will give surgical and medical treatment to employees of the company. Dr. J. H. Hughes, of Nanticoke will be head of the department in the Nanticoke-Glen Lyon district, and Dr. G. M. Stout, of Shamokin, will be in charge of the Shamokin division. The appointment of the district surgeon for the Lykens region has not been made. This firm, with many others, has been exempted from insuring compensation liability.

Hazleton—It has been announced at the offices of G. B. Markle & Co. that effective with Jan. 1 there would be an increase of 5c. per ton on all coal sold for local delivery. It is thought that most companies will add 10c. a ton to all prepared sizes and 5c. per ton to pea and smaller to meet the expenses incident to insuring under the compensation act.

Mauch Chunk—As reflecting the conditions in the anthracite coal trade the Mauch Chunk Iron Works is working night and day turning out machinery used exclusively in connection with the mining of anthracite.

Bituminous

Pittsburgh—The mines are having difficulty in meeting the demand for immediate shipment, and the car shortage has reached an acute stage and threatens to become more serious. Premiums are being offered for early deliveries of coal, but the mining companies are seldom in a position to take full

advantage of the situation. Similar conditions prevail in the coke trade. Labor and car shortage are holding down production, while prices are advancing.

California—Following a one-day strike 500 miners employed in the Crescent mine of the River Coal Co. recently returned to work. The men went on strike because of trouble in the local Union, District No. 5, United Mine Workers of America. It appears that there was internal dissension in the Union, and the coal company refused to pay the check off into the Union fund. This difficulty was adjusted, but it is believed that more trouble will be encountered later.

Johnstown—Officials of the Smokeless Coal Co. recently turned over to the associated charities \$63.90, representing the donation of the corporation and its employees to the fund being raised by that institution. Donations of individuals ranged from 25c. upward.

It is reported that the Cambria Steel Co. has purchased a large tract of coal land in the South Fork field.

Connellsville—The Pittsburgh Coal Co. has sold to the Montour Railroad Co. all the coal underlying 76 small strips of land in Mt. Pleasant, Cecil and Peters Township, of Washington County, comprising the right-of-way of the grantee in these townships. The consideration was \$65,610.

Holders of undeveloped coal lands in Greene County and in West Virginia, are anticipating a revival of sales. It is said that options have been given on two large fields, the ownership of which is vested in residents of Fayette County. A tract of 3,000 acres along Jones Creek in Harrison County and another near Blacksville in Monongalia County are the West Virginia fields included in options which expire Jan. 1, and Feb. 1, respectively. A third field, for which an option is sought, is located along Ten Mile Creek, in Greene County, and is known as the Rutan Field. This comprises about 6,000 acres which has been thoroughly tested.

WEST VIRGINIA

Clarksburg—The car supply of West Virginia has been better during the last week or more and the outlook is said to be encouraging. With plenty of orders the operators have in the past been unable to keep their mines running full time because they could not secure an adequate supply of cars. The car supply is now said to be much better than it has been for some time, although more hoppers are needed to keep the mines in full operation.

Wheeling—The worst coal famine since the spring of 1906, is believed to be impending by some coal operators. It is thought that the present price of coal which is high, will advance steadily until spring. The shortage of cars, scarcity of labor and the abnormal demand caused by an awakening industry are responsible for the shortage. All railroads are stocking coal and there is practically no free fuel in the market.

Gary—The United Supply Co. gave its annual Christmas treat to the children of the various plants of the United States Coal and Coke Co. this year as usual. Each child was given a 1 lb. box of good candy, a box of popcorn and two apples. This year in order to supply the treat it required over a ton of candy, over 10 barrels of apples and 7 barrels of popcorn balls. The same custom prevails in Pennsylvania where the Union Supply Co., an allied firm, has 57 stores. In that field this year 22½ tons of candy was required for the Christmas treat.

TENNESSEE

Chattanooga—Judgments of \$200,000 are asked against the Continental Coal Co. of Tennessee in suits filed in the local Circuit Court by the Four Mile Coal Co. and the Continental Coal Corporation of Wyoming. The plaintiffs allege that they are entitled to that aggregate amount as royalties on certain coal lands in eastern Kentucky.

KENTUCKY

Whitesburg—Advance orders aggregating, it is stated, millions of tons of coal have been placed with the Consolidated Coal Co. and the Elkhorn Mining Corporation in Letcher County for delivery during 1916. The latter company, it is said, has closed a 3-yr. contract for the entire output of all its mines. On the basis of regular runs this would mean from 5,000,000 to 7,000,000 tons. The United States Steel Corpora-

tion plants at Gary, Ind., make up one of the biggest customers.

Williamsburg—All of the mines in this section are reported to have orders enough on hand to keep them running for several months. An extra train has been put in service on the Pine Mountain branch of the Louisville & Nashville to take care of the extra traffic.

OHIO

Bellaire—The new mine of the Arthur J. Morgan Coal Co. located at Bannock, recently loaded its first coal. The mine of this company operated in this city will soon be abandoned and a number of the local miners will move to Bannock where they will be re-employed.

Cannelville—The power plant of the Rose Hill Mining Co. was destroyed by fire recently, causing a loss of about \$15,000. The cause of the fire was an overheated stove.

Columbus—Operators in the states of Ohio, Illinois, Indiana and western Pennsylvania have received an invitation by mail from John T. White, international president of the United Mine Workers of America for a conference to be held at Chicago Jan. 6 to discuss the question of reviving the four-state wage agreement. All Ohio operators are opposed to renewing the agreement which was dropped in 1914.

Flushing—All of the property of the St. Clair Coal Co., which operated the Black Oak Mine near Flushing has been sold to the Wheeling & Lake Erie Mining Co. for a consideration reported to be \$170,000. The Wheeling & Lake Erie Mining Co. operates mines at Dillonvale and Connorville.

INDIANA

Indianapolis—The Miners National convention will be held in this city on Jan. 18. It is expected to be the largest miners' convention ever assembled in this country.

ILLINOIS

Springfield—Complete returns from the 13 districts of the United Mine Workers of Illinois indicate the following re-elections: President, Frank Farrington, of Streator; vice-president, Frank Hefferly, of Collinsville; secretary-treasurer, Duncan McDonald, of Springfield; international board member, John Zimmerman, of Springfield.

The Illinois State Miners' Examining Board announces that it will hold meetings at the following places during the month of January: Spring Valley, Jan. 4; Peoria, Jan. 5; Danville, Jan. 6; Taylorville, Jan. 7; Staunton, Jan. 8; Eldorado, Jan. 11; West Frankfort, Jan. 12; Herrin, Jan. 13; Duquoin, Jan. 14; Centralia, Jan. 18; Belleville, Jan. 19; Springfield, Jan. 20.

Livingston—Sales Manager Sextro of the Rutledge & Taylor Coal Co. announces that the company broke all records in December at its three mines at Security, Livingston and Nokomis, Ill. The output was 250,000 tons. At Security and Livingston only two days were lost, Christmas and miners' election day. At Nokomis one additional day was lost on account of surplus. The Livingston output was 116,700 tons, the Security 74,000 and the Nokomis 59,400. The best day at Livingston was Dec. 8, 4,953 tons being produced; at Security Dec. 3, with 3,212 tons, and at Nokomis Dec. 23, with 2,756 tons. Mr. Sextro is confident that the April to April output will be 2,000,000 tons.

KANSAS

Leavenworth—Three hundred convicts working in the coal mine of the state penitentiary here struck during Christmas week for better food. Guards were overpowered by miners armed with picks and several were locked in the mine stables. A group of visitors from the state university also were overpowered by the strikers and held underground for several hours. The demands of the strikers were agreed to, although several, it was said, have been placed in solitary confinement as punishment. Trustees were sent into the mine after the trouble. The output was impaired only one day, it is understood.

MONTANA

Hamilton—The Darby coal mines, in the Bitter Root Valley near this place, are destined to become an important asset to this valley, according to many prominent men who have visited the field during the past month. The Darby mines have been inactive for a number of years, but recently there was incorporated the Darby Coal and Development Co. and the development work has been placed in the hands of Joseph H. Houston. Houston is a mining man of considerable experience, having been engaged in the Alaskan fields and in the South for many years. The company owns 681 acres located within $\frac{3}{4}$ mi. of the main line of the Northern Pacific R.R. The company is purely a local concern.

Bozeman—Excitement is at fever height on Trail Creek on account of the discovery of the long-sought lead of coal in the Gallatin-Park boundary country. Bozeman is the ship-

ping point of the famous Maxey mine of this district. It has been announced that the lead is a 15-ft. vein of coal, harder and probably superior to the coal that is now being worked in the district. Over 600 ft. through solid limestone has been driven to reach the vein. Recently the Maxey Brothers and the Northern Pacific have sent several engineers of national repute over the property to report on these fields. These reports agreed that millions of tons are in the 10-ft. vein that is now being worked, and the possibilities opened by the new vein are unlimited.

WASHINGTON

Seattle—Fifty men laboring nine hours digging away debris in the Newcastle mine of the Pacific Coast Coal Co. were rewarded by finding Thomas Zathias unhurt after the cave-in. Zathias was calmly sitting awaiting rescue. The cave-in resulted from a slide of some 60 tons of debris.

PERSONALS

Frank Riordan, of Summit Hill, Penn., has been appointed superintendent of the Lehigh Coal and Navigation Co.'s compensation bureau, with headquarters at Lansford, Penn.

Hugh McDonald, the veteran mine inspector of Luzerne County, Penn., has resigned his position as inspector of the Pittston District, and Robert Johnson, of Plains, has been appointed his successor.

H. F. Baker, formerly secretary, has been elected a vice-president and will have direct charge of the sales of the Lehigh Coal and Navigation Co. Henry Pease, now treasurer, succeeds to the position of secretary.

D. A. Thomas, the Welsh coal operator who has made several trips to this country and was here several months last year as the business agent of the British government, was made a baron by King George on New Year's Day.

Robert Matthew Raymond, a prominent mining engineer, has been appointed Professor of Mining in the Columbia University Graduate School of Mines. The appointment is one of the most important that has been made in the Graduate School of Mines and has the unanimous support of the associates of the school and prominent alumni.

James T. Reynolds, safety inspector for the Aetna Accident and Liability Co., of Hartford, Conn., has resigned with the above company, following his appointment as mine inspector with the Associated Companies, of Pittsburgh, Penn. Mr. Reynolds will devote the most of his time to mine inspection work in the Washington County field in the future with headquarters in Pittsburgh.

Earl A. Henry, chief of the State Department of Mines of West Virginia, recently received a testimonial from the various mine inspectors who now serve or have served under his direction. This consisted of a solid gold watch, chain and charm, also an album of letters from the various mine inspectors in the State of West Virginia. He also received from the M. A. Hanna Co., of Cleveland, Ohio, a handsome scarfpin and pair of gold links as a token of the company's appreciation for the good work done by him in the rescue work following the gas explosion at Mine No. 2 at Boomer. Each deputy inspector also received a token of regard from this company.

OBITUARY

Edgar Kudlich, who for many years held the position of mining engineer and superintendent of the coal properties of Cox Brothers & Co., died at Drifton, Penn., recently from pneumonia.

William Tirre, founder of the Tirre Coal and Mining Co., at Lenzburg, Ill., died at his home in St. Louis recently. He was 78 years old. He was formerly one of the leading operators in the Illinois field and sank several mines in the inner group, at Wilderman, Lenzburg and other places. He had not been active for 10 or 12 yr. and the company had been under the management of his son, Frank Tirre. His fatal illness began 10 weeks ago.

Donald Ross, a pioneer and prominent citizen of Edmonton, Alta., died recently at the age of 75 years. He was born in Scotland and came to America when 17 years old. After an adventurous life in the Western States where he engaged in gold mining he settled in Edmonton 43 years ago, when it

was merely a trading post and took an active part in its development, including the establishment of the coal mining industry. Mr. Ross was the first man to mine coal commercially in the district, and was prominent in connection with other commercial and public enterprises.

RECENT COAL AND COKE PATENTS

- Mine Car Wheel.** J. Coan, Baldwin, Col. 1,164,470, Dec. 14, 1915. Filed Aug. 17, 1915. Serial No. 45,953.
- Furnace Grate.** J. Van Vleck, New York. 1,163,288, Dec. 7, 1915. Filed Mar. 18, 1915. Serial No. 15,205.
- Coal Washer.** H. G. Cook, St. Louis, Mo. 1,162,753, Dec. 7, 1915. Filed Apr. 18, 1914. Serial No. 832,714.
- Boiler Flue Joint.** L. W. Craft, Chicago, Ill. 1,164,577, Dec. 14, 1915. Filed Apr. 3, 1915. Serial No. 19,007.
- Coal Jig.** G. E. Reynolds, Wyoming, Penn. 1,166,078, Dec. 28, 1915. Filed Apr. 20, 1915. Serial No. 22,626.
- Boiler Furnace.** E. Lane, Kansas City, Mo. 1,165,981. Dec. 28, 1915. Filed Sept. 25, 1907. Serial No. 394,566.
- Coal Washing Jig.** C. A. Wendell, Joliet, Ill. 1,163,292, Dec. 7, 1915. Filed Mar. 8, 1915. Serial No. 12,918.
- Furnace Grate.** G. F. Pierce, Kansas City, Mo. 1,163,259 Dec. 7, 1915. Filed July 14, 1913. Serial No. 778,924.
- Boiler Front.** J. S. Webster, Minneapolis, Minn. 1,164,687, Dec. 21, 1915. Filed May 1, 1914. Serial No. 835,688.
- Coal Washing Apparatus.** C. A. Wendell, Joliet, Ill. 1,165,734, Dec. 28, 1915. Filed Mar. 8, 1915. Serial No. 12,919.
- Mechanical Stoker.** O. Wundrack, Maywood, Ill. 1,162,965, Dec. 7, 1915. Filed Oct. 12, 1914. Serial No. 866,264.
- Continuous Mine Hoist.** E. O'Toole, Gary, W. Va. 1,165,017, Dec. 21, 1915. Filed Mar. 16, 1914. Serial No. 824,978.
- Smoke Consuming Furnace.** E. Lane, Pittsburgh, Penn. 1,162,736, Nov. 30, 1915. Filed Oct. 4, 1909. Serial No. 520,786.
- Safety Device for Mine Cars.** B. F. Fern, Scranton, Penn. 1,165,659, Dec. 28, 1915. Filed Apr. 8, 1915. Serial No. 19,979.
- Steam Boiler.** G. R. and A. M. Shaffer, Big Run, Penn. 1,162,408, Nov. 30, 1915. Filed Aug. 19, 1912. Serial No. 715,920.
- Smoke Consuming Furnace.** E. Lane, Pittsburgh, Penn. 1,165,982, Dec. 28, 1915. Filed Oct. 4, 1909. Serial No. 520,786.
- Mining Apparatus.** G. C. Wilthew, Mahanoy City, Penn. 1,164,900, Dec. 21, 1915. Filed July 22, 1913. Serial No. 780,550.
- Smoke and Cinder Condenser.** E. S. Jones, Buffalo, N. Y. 1,166,132, Dec. 28, 1915. Filed Mar. 13, 1914. Serial No. 824,470.
- Smoke Consumer.** C. E. and J. W. Netherton, North Judson, Ind. 1,162,093, Nov. 30, 1915. Filed Mar. 20, 1915. Serial No. 15,917.
- Boiler.** H. A. Sprenger assignor to J. Sprenger & Sons, Detroit, Mich. 1,164,884, Dec. 21, 1915. Filed Mar. 11, 1914. Serial No. 823,931.
- Gas Producer.** G. M. S. Tait assignor to Tait Producer Co., New York, N. Y. 1,165,347, Dec. 21, 1915. Filed Mar. 4, 1910. Serial No. 547,194.
- Cutter Head for Mining Machines.** J. W. Stedelin and G. Klein, Centralia, Ill. 1,164,424, Dec. 14, 1915. Filed July 1, 1915. Serial No. 37,521.
- Cleaning Attachment for Fire Tubular Boilers.** H. R. Boesch, New York. 1,164,914, Dec. 21, 1915. Filed Sept. 20, 1915. Serial No. 51,717.
- Mining Machine.** H. B. Dierdorff assignor to Jeffrey Mfg. Co., Columbus, Ohio. 1,162,142, Nov. 30, 1915. Filed July 30, 1909. Serial No. 510,493.
- Coal and Sand Reclaiming Device.** G. E. Alleman, Shoemakersville, Penn. 1,165,379, Dec. 28, 1915. Filed May 14, 1914. Serial No. 838,498.
- Fuel Lighter.** R. W. Dull assignor to Stephens-Adamson Mfg. Co., Aurora, Ill. 1,164,934, Dec. 21, 1915. Filed June 16, 1910. Serial No. 567,284.
- Automatic Stoker.** D. T. Williams assignor to Standard Stoker Co., Wilmington, Del. 1,164,641, Dec. 28, 1915. Filed May 18, 1915. Serial No. 28,812.
- Automatic Smoke Preventer.** C. J. Arnold and W. P. Rutherford, Louisville, Ky. 1,166,307, Dec. 28, 1915. Filed Oct. 13, 1914. Serial No. 866,521.

Smoke Consuming Boiler. W. C. Gurney assignor to Gurney Heater Mfg. Co., Boston, Mass. 1,163,655, Dec. 14, 1915. Filed June 15, 1914. Serial No. 845,326.

Soot Blower for Water Tube Boilers. J. Magee assignor to Diamond Power Specialty Co., Detroit, Mich. 1,162,088, Nov. 30, 1915. Filed Jan. 4, 1915. Serial No. 363.

Non-Sifting Graft for Furnaces. W. McClave, assignor to McClave-Brooks Co., Scranton, Penn. 1,165,792, Dec. 28, 1915. Filed Dec. 16, 1913. Serial No. 807,079.

Coal Handling Machinery. C. S. Williamson assignor of one-half to Mead-Morrison Mfg. Co., Boston, Mass. 1,162,838, Dec. 7, 1915. Filed June 24, 1912. Serial No. 705,359.

Means for Bringing up Cars to Tipples. E. G. Deucher assignor to Brown Hoisting Machine Co., Cleveland, Ohio. 1,165,947, Dec. 28, 1915. Filed June 23, 1913. Serial No. 775,448.

INDUSTRIAL NEWS

Gallapolis, Ohio.—A coal fleet consigned by the Pittsburgh Coal Co., in charge of the towboat "W. K. Field" was sunk at Lion Island in the Ohio river recently. The machinery of the towboat became disabled.

St. Louis, Mo.—Officials of St. Louis railroads report that the storms throughout the North, East and Middle West have tended to make the car shortage more acute. This is especially true of equipment for handling coal.

Beckley, W. Va.—The W. M. Ritter Lumber Co. of Columbus recently purchased for \$5,000,000 all the lumber on the land of the Carolina, Clinchfield & Ohio R.R., and the Clinchfield Coal Corp. in Virginia and Kentucky.

Duluth, Minn.—The coal coming into the joint harbor of Duluth-Superior showed a falling off for the year 1915 of 1,144,815 tons. The total tonnage was 8,343,482, of which 6,656,206 tons was bituminous and 1,687,276 anthracite.

St. Louis, Mo.—Illinois operators and officials of the United Mine Workers of Illinois met recently at St. Louis to settle local differences and clear up all disagreements before the beginning of the new year. The matters taken up were of routine character.

Birmingham, Ala.—The Galloway Coal Co. has purchased 520 acres of coal lands near Carbon Hill adjoining the present holdings of the company. At least 3,000,000 tons have been added to the holdings of the company. Active preparations are already under way for developing.

Philadelphia, Penn.—In the statement just issued by the Philadelphia & Reading Coal and Iron Co. for the month of November it is shown that receipts increased \$662,127 over November of last year. The operating profit amounted to \$293,653, which was an increase of \$73,136. The surplus amounted to \$285,653, being an increase of \$212,517.

Charleston, W. Va.—Formal protest was recently filed with the Interstate Commerce Commission against the adoption of new tariffs recently filed by railroad companies, proposing an advance of 15c. per ton for hauling West Virginia coal to Western and Northwestern markets. This protest will be made public by the Public Service Commission and the coal associations of the state.

Washington, D. C.—Illinois and Indiana coal operators' associations recently complained to the Interstate Commerce Commission that the Atchison, Topeka & Santa Fé and other railroad rates on coal in carloads from Indiana and Illinois mines to Wisconsin, Minnesota and Iowa points are unreasonable compared with the rates to the same points from mines in Ohio, West Virginia and Pennsylvania.

Columbus, Ohio.—Railroads covering the Middle West are busy stocking immense quantities of coal in anticipation of a general suspension in mining following the expiration of the present wage scale, Apr. 1. It is believed by those in charge of the fuel supply of the larger roads that some difficulty will be experienced in getting together on the wage scale after that date and they desire to be safe as far as possible.

Martins Ferry, Ohio.—Although the lake trade has been closed for some time, its effect has not yet been felt in the eastern Ohio coal fields. Every mine in this field is working to as full a capacity as the supply of cars will allow. Anticipating a shutdown after Apr. 1, many industries are storing coal through fear of a shortage. An abnormal boom in other industries is also aiding in increasing the demand for fuel.

St. Louis, Mo.—Traffic on the Western railroads has held up so well the past month that earnings gains for December will be proportionately greater than those for November. The

latter in turn were in most cases greater than for October. The trend of business this fall and winter has been toward improvement, while a year ago it was the other way. Railroad men say there is no indication of any slackening of the freight movement.

La Follette, Tenn.—The property of the La Follette Coal, Iron and Railway Co., which was sold at a receiver's sale on Dec. 18, was taken over by the La Follette Coal and Iron Co., composed of the Boston bond and note holders. The mines and furnace will continue in operation by the new company. The furnace is now being relined and it is expected to be blown in shortly. It is understood that Neil Robinson, receiver, is to be president of the new company.

Charleston, W. Va.—Joint bond in the sum of \$200,000 was recently accepted in the United States Court by E. W. Knight, W. G. Matthews, and Staige Davis, who were designated as special commissioners to sell the coal mining properties and land holdings of the Paint Creek Collieries Co. The holdings of this company will be sold to satisfy claims of the Scranton Trust Co., of Scranton, Penn., which represents the bondholders of the company. The date of the sale has not yet been decided by the special commissioners.

Belleville, Ill.—Mrs. Clarice Abend, widow of Ernest A. Abend, president of the Abend Coal Co. of this place, has brought suit against the North American Accident Insurance Co. in the Belleville Circuit Court on a \$7,500 accident policy held by Abend in the company. Abend was killed by a plunge down the mine shaft. The coroner's jury returned an "open" verdict. The company has refused to pay on the contention that Abend's death was not accidental.

Philadelphia, Penn.—The anthracite roads have been informed that the effective date for the new tidewater rates has been postponed until Apr. 1, 1916. The reduction was ordered by the commission Aug. 14, but owing to the vast amount of work connected with getting out new tariffs the date has been postponed three times. It has been estimated that the reduction will amount to about \$8,000,000 annually in the freight revenues of the roads affected.

Connellsville, Penn.—A cargo of 2,700 tons of American coal recently arrived at Boma, Lower Congo, Africa. The freight charges amounted to about \$12 per ton and the cost of the coal as finally delivered was approximately \$15 per ton or slightly higher than the usual price of briquettes from Belgium. The port authorities, used to employing briquettes, were not satisfied with the appearance of the American smokeless coal but after a few trials they were convinced of its economical value and steam producing qualities.

Philadelphia, Penn.—In an opinion handed down by Judge McPherson of the United States Circuit Court of Appeals the fine of \$200,000 against the Central R.R. of New Jersey for rebating was sustained. The original charge grew out of an old lease which the company had with the Lehigh Coal and Navigation Co. whereby the coal company was granted certain reductions of freight on shipments of coal. The railroad company had been indicted on 200 counts, but was convicted only on 25. It is quite likely that the case will be carried to the United States Supreme Court.

St. Louis, Mo.—The Williamson County Coal Co., with general offices in this city will open a branch about Feb. 1, at 936 Plymouth Bldg., Minneapolis. William M. Cowan, for many years identified with the coal trade of the Twin Cities and surrounding territory and of recent years with the Womack-Fooshe Coal Co., has been appointed Northwestern sales agent. He will further promote and expound the merits of "Black Brier" coal which has attained a large following in that territory.

Paducah, Ky.—An important development in the western Kentucky coal-carrying trade is the inauguration of service on the Paducah & Illinois R.R., which later will connect the Illinois Central and the Nashville, Chattanooga & St. Louis with the Chicago, Burlington & Quincy in Illinois. The \$4,000,000 bridge over the river is now in process of construction and until it is completed trains will be ferried across the river by the steamer "W. B. Duncan." The Union Trust Co. of Chicago has loaned the Paducah & Illinois R.R., which is some 11 miles long, \$7,500,000 on the completed railroad and bridge.

Toronto, Ohio.—It is reported that an effort is being made to secure leases on 32,000 acres of coal land in Hancock County, W. Va., and that this effort has met with partial success. The promoters wish to secure 80% of this large tract before commencing development operations. It is also said that this development is the forerunner of several big industrial projects contemplated in Hancock County. It is believed that large coke ovens are to be located at Kings Creek near Weirton furnishing employment for a large number of men, and necessitating the erection of a considerable number of buildings.

St. Louis, Mo.—The new East St. Louis & Caseyville R.R., a narrow gage line constructed from Caseyville to East St. Louis a distance of 8 mi. for the sole purpose of transporting coal was unable to commence operations on Jan. 3 as intended because of inability to secure the necessary equipment, delayed on account of the manufacturer being unable to secure the raw material. The railroad company will operate coal mines at the Caseyville end with construction so arranged that the narrow gage railroad cars will be run into the slope mines, loaded and transported to East St. Louis, where a rescreening and reloading plant is built.

San Francisco, Calif.—The Electric Storage Battery Co. of Philadelphia announces a change in the handling of its Pacific Coast business. Due to changes in the organization of Messrs. Pierson, Roeding & Co., which has acted as sales agents on the Coast since 1910, the Battery company will hereafter conduct its coast business through George R. Murphy, soliciting agent, with offices in the Rialto Building, 118 New Montgomery Street, San Francisco. The depot which was opened in San Francisco a number of years ago and where a large amount of stock is carried, will give Mr. Murphy a base of supplies that will insure prompt shipments of batteries and parts.

Nanaimo, B. C.—There is every indication that the Canadian Collieries Co. Ltd., is about to reopen the old Wellington mine at North Wellington. The company abandoned these mines several years ago with the belief that they were worked out. Although no official announcement has been made of their reopening, the fact that certain legal difficulties have been settled in the courts, and that surveyors for the company are at present on the ground indicate preparations for early action. Coal is known to underlay the ground in that vicinity, though at a greater depth than the seams formerly worked by this company and also those of the old Dunsmuir company previous to the opening of the Extension mines.

Knoxville, Tenn.—The property of the Big Brushy Coal Co., at Petros, Morgan County, Tenn., on the Harriman & North-eastern R.R., was sold by A. W. Evans, receiver, on Dec. 30, by order of the Court, to Sam M. Joyner of Petros for the sum of \$5,000, subject to confirmation by the Court. The property is said to be worth in the neighborhood of \$60,000, and under the law the Court will be allowed to receive new bids, and it is thought that this will be done, and that the bid of Mr. Joyner will be raised by Knoxville, Atlanta and Chicago parties who were unable to reach Petros at the time of the sale owing to a misunderstanding as to the time. This is the second sale of this property by a receiver, having been sold in 1912 for \$102,000. The mine is electrically equipped, and the reason it has not paid is said to be because of the extent of the workings and insufficient capital.

St. Louis, Mo.—Railroads operating eastward from Chicago and St. Louis continue to be flooded with traffic. Comparisons are all out of proportion and embargoes continue to be in force. Revenues are increasing rapidly and would be larger if it were possible to move the business. West-bound tonnage is now back to nearly normal in point of volume as compared with other years, but the great amount of import tonnage is still lacking. General business in the territory covered by the Eastern lines is heavy in special lines of manufacture, and is steadily increasing in purely domestic lines of trade. Officials of Southern roads report a seasonable gain in traffic, betterment in the transaction of business of a general nature and a restoration of confidence which bespeaks more prosperous times.

St. Louis, Mo.—A decision of great interest to coal interests has been handed down by the United States Circuit Court of Appeals here, in which it is declared to be the law that ownership of land extends from the clouds to the center of the earth and that the owner has the right to lease a stratum beneath the surface of land that has already been leased for agricultural purposes, and that the holder of a subsurface stratum lease is entitled thereby to possession and use of a portion of the surface land for development work. The decision was given in an oil case but the rule laid down is equally applicable to coal leases. The case involved the seizure by the Midland Oil and Drilling Co. of half an acre of land in Nowatah County, Okla., the surface rights of which had been leased to another. The company's excuse was that it needed the land to develop its leasehold in the oil and natural gas deposits beneath. The lessee of the surface asked for an injunction, which was granted in the lower court. The United States District Court dissolved it. The Court of Appeals has now upheld the District Court. In the majority opinion it is declared that the ownership of land extends from the sky to the center of the earth and that a land owner may subdivide this holding in horizontal or vertical planes for lease or sale. A minority opinion holds that the rights of the surface lessee are absolute during the period of the lease.

Market Department

General Review

Firm situation continues in anthracite with supplies notably short. Bituminous still advancing with interior coal going to Tidewater. Activity in industrial operations force manufacturers to buy. Heavy stocking operations in the Middle West.

Anthracite—Milder weather conditions has resulted in a slowing down in the retail trade, though without relieving the heavy pressure for coal in the wholesale end. A large tonnage is moving in spite of the unfavorable transportation situation, but there is still an acute paucity of supplies, as is evidenced by the fact that the individuals themselves are endeavoring to purchase additional tonnage from the large companies. The initial effect of the increased circulars which the companies have been forced to put into effect, was to restrict buying but on the whole they met with less opposition than anticipated, and consumers were again soon in the market as actively as ever. The companies shipping Down East points admit their inability to meet the demand in certain sizes, and with stocks at a low ebb there is distinct anxiety in some quarters. The conditions on the Northern border are less favorable, the Canadian trade responding very slowly to the improved industrial situation.

Bituminous—The market has advanced still further and there is not the slightest indication that the top of the rise has yet been reached. More buyers are apparently being forced into the prompt market each week, and there are no prospects for any reaction so long as this condition exists. Evidence of the tense situation is seen in the disruption in the customary channels of trade, such as the active canvassing of the Pittsburgh operators in the New England market, and of Ohio shippers for Tidewater business at Philadelphia. Large contractors are making strenuous efforts to keep their customers supplied, in spite of which actual distress conditions are developing at some New England points. Many buyers are still canvassing the mining regions for odd tonnages, particularly Central Pennsylvania, but without much success.

Exports—Offshore business has practically dropped out of sight as a result of the heavy pressure for coal locally. However, the tonnage record at Hampton Road for December was somewhat better than anticipated, and there is still a fair export movement, particularly to Italian ports. Vessel rates continue at the same high level as last week and a significant development in this direction was the appearance of several new colliers in the trade, which have started on their maiden voyage to foreign destinations. In coastwise shipping, old abandoned vessels are being overhauled and put into service once more.

Ohio Valley—The demand for coal from Down East points, the first time that Pittsburgh district coal has moved in that direction since the great anthracite strike of 14 years ago, is the chief development of the week. The possibility of labor difficulties, Apr. 1, also looms up as an even more impelling factor in the situation than usual; manufacturers are swamped with orders at highly profitable figures, and positively cannot afford to risk interruptions in operation, but in spite of this fact they find it impossible to accumulate any surpluses. The withdrawal of tonnage to Tidewater points has accentuated the shortage, and stiffened up prices still further.

Middle West—The higher temperatures have restricted the demand for domestic grades, but this slowing up has been more than compensated for by the curtailed production over the holiday period. There is persistent buying on the part of large steam consumers for storage purposes, estimates of the tonnage absorbed in this direction being conservatively placed at seven million. Prices are exhibiting a strong rising tendency, and a continuance of the present demand will undoubtedly force them to higher levels. Colder weather to the Northwest where surpluses are at a minimum, is bringing out substantial orders. The demand centers more particularly on the steam grades, which are the mainstay of the market, the domestic business being somewhat below normal.

A Year Ago—Anthracite steady, on about a normal basis. The bituminous trade is quiet, but there are distinct indications of a turn for the better. New contracts coming up. Prices firm but no advance is anticipated for the present.

BUSINESS OPINIONS

The Iron Age—No year has held out such promise at its beginning as the American steel trade finds in looking forward into 1916. Never has so large a volume of firm orders, as distinguished from cancellable contracts, been on the books of the steel mills, and never since the Steel Corporation was formed have prices on future delivery business been at so high a level. Generally new orders in December were less than in November and the Steel Corporation's statement of next week is likely to show something less than the prodigious increase of November. The annual canvass of new steel capacity under construction shows far greater additions under way for 1916 than any estimates the trade has entertained. Independent steel companies are building or have plans for 73 new openhearth furnaces with an annual capacity of 2,715,000 tons of ingots, while the Steel Corporation has made appropriations for 18 new furnaces (including four large ones for duplexing), representing 1,550,000 tons a year. Here is the amazing total of 4,265,000 tons of capacity coming forward—an amount fairly raising the question whether war prosperity may not lead to the overdoing of new construction.

Boston News Bureau—President Wilson is quoted as saying that he is determined to have the submarine situation settled once for all. The news of the day is not otherwise disturbing; in fact it is quite the reverse. The labor problem is one which looms up with portentous possibilities. It is the one disturbing element in our business situation. So stupendous have been the opportunities for profits on war orders that labor engaged to turn it out has been getting all it asked, and without putting up much of a fight. Naturally peace labor, if such it may be called, is very uneasy and getting ready to enforce demands which it will not be easy to deny, and which promise serious complications when once the tide of our prosperity turns from flood to ebb.

Bradstreet—While wholesale traders have experienced a comparatively quiet week, due to the taking of inventories, the seasonal pause is less marked than in other years, and in some instances orders continue to come out in a way that hampers stock-taking. On the other hand, industry, too busy to take account of holidays, proceeds to higher ground, holiday trade at many points was of record proportions and orders already booked for spring delivery are heavy. Stocks in the hands of final distributors are exceptionally low, and hopes of an early ending of the European wars having well-nigh vanished, the consensus of opinion is that goods will have to be bought here on an increased scale and at higher prices, not only by our own people but by foreign consumers as well. To the foregoing budget of favorable tidings must be added the record-breaking mail-order business.

Dun—At the close of another epochal year this country occupies the position of international supremacy in finance, commerce and industry, and optimism is universal as 1916 opens with prospects bright beyond precedent. So much hesitancy ordinarily characterizes the business situation at this season that the prevailing activity is noteworthy, if not surprising. Commercial failures this week are 366, against 391 last week, 381 the preceding week and 481 the corresponding week last year.

Marshall Field & Co.—Current wholesale distribution of dry goods is normal as compared with the corresponding period of a year ago. Road sales for immediate and spring delivery show a considerable gain over a year ago, and the number of customers visiting the market shows a slight increase. Collections are normal. Prices firm.

American Wool and Cotton Reporter—It is predicted that during the next six months this country will see the heaviest consumption of wool it has ever seen. An active heavy-weight season is expected. The manufacturers state that they never saw orders coming in so fast from the goods market. While the week as a whole has been rather quiet owing to the holiday season, a number of manufacturers have been in the market giving orders for wool which they think will very soon advance in price. One of the big mills of the country was represented by a buyer.

ATLANTIC SEABOARD

BOSTON

Hampton Roads coals maintain high delivered prices for January and February, but the market is still rather narrow. Georges Creek shipments continue light. Holiday season affects Pennsylvania output but prices not any higher. Water freights the same, but in most cases bottoms scarce. Anthracite shipments very slow.

Bituminous—Delivered prices on Pocahontas and New River are maintained at the high level that has prevailed now for nearly a month, since water freights reached the \$3 mark, but there is not yet the broad market for spot coal that was so freely predicted. Enough buyers are forced into the market, through different causes, to keep prices from sagging. If the car shortage extends to the Virginia railroads, there is no doubt the present f.o.b. figure will materially advance. As it is, the \$2.85 price is merely nominal except to the few factors who have coal to sell and at the same time have boats under charter in excess of their contract obligations.

All-rail deliveries through Connecticut and western Massachusetts have so far broken down that there is a largely increased demand for Hampton Roads coals via Providence and New Haven. It is inquiry of this sort that helps keep prices at their present level of \$6.75@7 alongside. The demand inland from Boston has not been as active as at Providence or New Haven. All-rail service has been better in comparison and shippers over Mystic Wharf, Boston, have relied to a greater degree on steamers and for the most part have managed to scrape along with small reserve stocks. Two snowstorms within the week have slowed up car movement and it would take very little to send prices higher.

At the same time Hampton Roads factors are cautious about sending cargoes forward "on consignment." So much is contingent on car movement from the Pennsylvania districts all-rail, on coastwise freights, and on the proportion of boats now under charter that will also come forward "on the market" that there is noticed a tendency to go slowly.

The Georges Creek shippers have been laboring under very much reduced output on account of poor car-supply. Several units of the largest fleet regularly loading at Baltimore have been lately diverted to Hampton Roads in the effort to keep up shipments on contracts in this territory. Only small quantities of this grade are available at Philadelphia and New York and then only on urgent requirements.

There is no easing up on the Pennsylvania grades in any quarter. The holiday season has had its usual effect on output. There is such a volume of all grades in transit, however, and so many embargoes are in force, that prices have hardly changed during the week. An increasing number of high-volatile coals are offered, but most New England buyers have to be in desperate straits before they will accept coals of that character. Pittsburgh shippers are canvassing this territory but the bulk of what spot coal is bought is placed with operators in the Clearfield and Cambria districts. So many consumers have had trying experiences the past month in getting cars through that they are inclined to turn to Tidewater delivery for relief.

Anthracite—Several of the shipping companies have confessed their inability to load stove size at New York and all shipments are delayed. The shortage of dock labor has further tended to make loading difficult and altogether dealers here have been caused much anxiety. An increased Tidewater demand because of the poor service all-rail is another disquieting factor. Stocks are not large, and as usual in such stringencies the districts about Boston and Providence and all along the coast are relying largely on water shipments from Philadelphia.

The Philadelphia & Reading Coal and Iron Co. and the Lehigh & Wilkes-Barre Coal Co. announced that, effective Jan. 1, they would discontinue adding the amount of the Pennsylvania state tax to their invoices and would advance the price of domestic sizes 10c. and pea coal 5c. With several of the shippers the prices of steam sizes have been advanced 25c.

Bituminous prices, f.o.b. loading port at points designated, are about as follows, per gross ton:

	Philadelphia	New York	Baltimore	F.o.b. Mine
Clearfields.....	\$4.00@4.50	\$4.25@4.80		\$2.75@3.25
Cambrias and Somersets.	4.25@4.75	4.50@5.00		3.00@3.40
Georges Creek.....				

Pocahontas and New River are still quoted \$2.85, f.o.b. Norfolk and Newport News, Va. On cars at Boston prices are \$6.75@7, and the same at Providence.

NEW YORK

Anthracite demand strong and dealers rushed. Some companies eliminate Pennsylvania State Tax. Shortage in Long Island towns. Bituminous situation eases up slightly but demand and prices remain strong.

Anthracite—The strong demand for anthracite coal continues and there is no improvement in the supplies. Dealers are rushed with orders and are making every effort possible to get coal to Tidewater.

New price lists taking effect Jan. 1 were issued by the Reading and the Lehigh & Wilkes-Barre companies which eliminate the Pennsylvania State Tax and advance the price of the prepared coals 10c. per ton at Tidewater. Heretofore these companies charged 2½% to cover the tax while the majority of the producers charged a straight 10c. per ton. Under the new price lists the Reading and Lehigh & Wilkes-Barre companies' prices will be the same as the others.

A few days of warm weather eased conditions somewhat and there was a slowing up in the urgent call. This did away in part with some premiums secured by individuals for prepared coals but the steam sizes continue strong with good premiums for quick deliveries. Complaint of lack of supply comes from Long Island points. All of the prepared coals are in strong demand, hardly any one size being favored. Most buyers are willing to take any proportion of sizes if assured of deliveries.

Current quotations, gross tons, f.o.b. Tidewater, follow:

	Lower Ports		Upper Ports	
	Circular	Individual	Circular	Individual
Broken.....	\$5.05		\$5.10	
Egg.....	5.30	\$5.30@5.30	5.35	\$5.35@5.35
Stove.....	5.30	5.30@5.30	5.35	5.35@5.35
Chestnut.....	5.55	5.55@5.55	5.60	5.60@5.60
Pea.....	3.50	3.50@3.75	3.55	3.55@3.80
Buckwheat.....	2.75	2.75@3.00	2.80	2.80@3.05
Rice.....	2.25	2.25@2.50	2.30	2.30@2.55
Barley.....	1.75	1.75@2.00	1.80	1.80@2.05

Bituminous—Clear and warm weather enabled shippers to take care of urgent cases during the early part of the week. Prices, however, continue strong and there is a heavy demand from local dealers and from New England, where manufacturers are in distress. New York shippers with New England connections are flooded with requests to get coal forward at any cost. Numerous local wholesale houses are at work late at night endeavoring to get shipments forward and to take care of the new orders.

There has been a further tightening in local conditions and prices for quick shipments on good grades are close to the \$5 mark. Some shippers predict \$4 coal at the mines during the present month. Beech Creek grades were quoted early in the week at from \$2.65 to \$2.90 at the mine. Strenuous efforts are being made by large contractors to get supplies, particularly those who have contracts with the city government.

Current quotations, gross tons, f.o.b. Tidewater, are on the following basis:

	South Amboy	Port Reading	St. George	Mine Price
Georges Creek Big Vein.	\$4.55@4.80	\$4.55@4.80	\$4.55@4.80	\$3.00@3.25
Georges Creek Tyson....	4.30@4.55	4.30@4.55	4.30@4.55	2.75@3.00
Clearfield:				
Medium.....	4.30@4.55	4.30@4.55		2.75@3.00
Ordinary.....	4.15@4.40	4.15@4.40		2.60@2.85
Broad Top Mountain.....				2.60@3.00
Cambria County:				
South Forks.....	4.30@4.55			2.75@3.00
Nanty Glo.....	4.30@4.55			2.75@3.00
Barnesboro.....	4.30@4.55			2.75@3.00
Somerset County:				
Quemahoning.....		4.30@4.55	4.30@4.30	2.75@3.00
Medium.....	4.20@4.40	4.20@4.40	4.20@4.40	2.65@2.85
Latrobe.....	4.15@4.35			2.60@2.80
Greensburg.....	4.15@4.35			2.60@2.80
Westmoreland.....	4.25@4.40			2.50@2.75
West Virginia Fairmont 1		3.80@3.90	3.80@3.90	2.00@2.10
Fairmont mine-run.....		3.80@3.90	3.80@3.90	2.00@2.10
Steam.....		4.05@4.30	4.05@4.30	2.50@2.75
Western Maryland.....		4.05@4.30	4.05@4.30	2.50@2.75

PHILADELPHIA

Anthracite production far below requirements. Stove and chestnut the shortest, though broken, buckwheat and rice are in good demand. Pea slows down due to new price. Bituminous rush continues, with rising prices.

The retail trade has marked time for the last week or ten days, but there has been no slowing up in the whole market. The advance in circular prices by most of the large shippers did not cause as much comment as anticipated.

As announced several weeks ago the price of pea coal on Jan. 1 was advanced to the full circular and as most of the shippers have now advised their customers that there will be no refund of tax, the price actually becomes \$2.55 and is so quoted in the circulars. Many of the dealers who have been giving their customers the advantage of the bargain prices of 50c. off the circular have now been compelled to advance

quotations to the old rates and this has caused much unfavorable newspaper comment. It is not at all certain, however, that the price war among some of the retailers is over. In West Philadelphia the dealers have plans for a truce, but there are no indications of peace in the vast territory in the northeastern section of the city. Indications of the strenuous outlook are seen in the efforts of some of the individuals to buy from the big companies for re-shipment to their trade. The production is far oversold and while a big tonnage is being moved consumers keep up their clamor for more.

Pea coal is the only size to slow up. Broken is active and no business is being solicited on this grade; all that is not needed for immediate consumption is in demand for storage purposes. There is also a good contract business on this size for the first three months of the year, even at the advanced price of \$3.35. Egg continues in the best supply, but even at that it is easily disposed of except with the individuals who find it necessary to use stove and chestnut sizes to move their egg at the full circular. Stove continues in the firm position held since early fall and chestnut is equally strong; in fact the demand for stove seems to increase and many dealers find it difficult to keep a full supply on hand. Chestnut, however, is not so serious as an immense tonnage was mined in the past six months for which there was no market, and there are large surpluses in storage yards.

Retailers complain of slow collections, as usual following the holiday season, but the shippers find receipts well above the average; the dealers are obviously doing their utmost to keep in good standing and before many weeks will very likely offer to pay in advance for coal.

The new price circulars came out this week, increasing the prepared sizes 10c. a ton and pea and the smaller grades 5c. The companies explain that the increase is only sufficient to cover added expense, such as insurance under the new compensation law and increased cost of mining supplies. The new prices per gross ton at mines for line shipment and f.o.b. Port Richmond are as follows:

	Line	Tide		Line	Tide
Broken.....	\$3.60	\$4.85	Pea.....	\$2.55	\$3.30
Egg.....	3.85	5.10	Buckwheat.....	1.55	2.30
Stove.....	4.10	5.10	Rice.....	.90	1.80
Chestnut.....	4.25	5.35	Barley.....	.55	1.55

Bituminous—There is not the slightest cessation in the rush for bituminous coal. Prices have advanced again from 5c. to 25c. per ton, although all grades did not share in the increase. Within a short time there will probably be no coal offered at less than \$2, as \$1.75 is the lowest quoted recently. Attracted by the fancy prices in this territory a greater number of offers of Ohio coal have been received, though not much has been placed as yet, due to the somewhat prohibitive freight rate. An occasional shipper reports that the car supply recently has been somewhat improved, though just as many report just the opposite. Prices per gross ton at the mines are as follows:

Georges Creek Bag Vein..	\$3.00@3.25	Fairmont gas, 1.....	\$2.15@2.25
South Fork Miller Vein..	2.80@2.90	Fairmont gas, mine-run..	2.00@2.10
Clearfield (ordinary).....	2.70@2.85	Fairmont gas, slack.....	1.75@1.85
Somerset (ordinary).....	2.70@2.80	Fairmont lump, ordinary..	2.00@2.10
West Va. Freeport.....	2.50@2.60	Fairmont mine-run.....	1.90@1.95
		Fairmont slack.....	1.75@1.85

BALTIMORE

Exports showed an increase the last week of old year. Bituminous prices stiff at tide. Anthracite at retail likely to advance.

There has been an increase in export movement from this port; last week, the closing period of December, saw a loading of 34,912 tons here on foreign account.

Bituminous rates remain stiff at tide, despite a much easier car supply. The bunker trade is particularly active and as high as \$4.75 per ton has been paid on steam coals delivered in holds, although ordinary sales have been made around \$4.40 and \$4.50.

Prices to the trade are about as follows:

	Mines	Balt.*		Fairmont	Mines	Balt.*
Geo. Crk. Big Vein	\$3.25	\$4.43	Ordinary mine run	\$1.85	\$3.33	
Geo. Crk. Tyson.....	3.00	4.18	Ordinary 1/2.....	2.00	3.48	
Clearfield.....	2.75	3.93	Ordinary slack.....	1.70	3.18	
South Fork.....	3.00	4.18	Low sulphur mine-			
Latrobe.....	2.50	3.68	run.....		Out of market	
Somerset (best).....	3.00	4.18	Low sulphur 1/2....		Out of market	
Somerset (good)....	2.75	3.93	Low sulphur.....			
Queamahoning.....	3.00	4.18	slack.....		Out of market	
Freeport.....	2.50	3.68				
Miller Vein.....	3.00	4.18				
			* F. o. b., outside	Capes.		

HAMPTON ROADS

Dumpings continue fair and tonnage for the month is close to a million. New steamers entering the trade.

Dumpings over the Hampton Roads piers for the last week of December were fair. The bulk of the foreign shipments as usual has gone to various Italian ports with some small cargoes to Kingston, Bermuda, etc. Coastwise cargoes have

gone to a number of the New England ports and to Baltimore with some small shipments South. The number of bunker steamers arriving has been fair and the government has also loaded one of the large colliers. The bulk of the movement has been on contract with only a small amount of spot sales. The accumulation of coal on the railroads is still somewhat in excess of normal and prices are practically the same.

The total dumpings for the month should amount to about one million tons. During December several new large coal steamers have taken their initial cargoes at Hampton Roads.

Railroad Tonnages—Dumpings over the local piers for the past five weeks compare as follows:

Railroad	Dec. 4	Dec. 11	Dec. 18	Dec. 25	Jan. 1
Norfolk & Western....	116,450	87,726	104,942	162,494	.....
Chesapeake & Ohio....	81,875	70,535	55,503	96,620	91,177
Virginian.....	41,386	52,247	61,728	.....	.....
Totals.....	239,711	210,508	222,173	.....	.....

Ocean Charters, Clearances and Freights

VESSEL CLEARANCES

The following steamers have cleared from various ports during the week ended Dec. 31:

VIRGINIA				PHILADELPHIA			
Vessel	To	Tons	Rate	Vessel	To	Tons	Rate
Cora A.	Bermuda	327	\$3.74	Storford	Havana	2,256	
Clare ¹	Boston	5,000	3.25	Santa Clara	Havana	1,668	
R. Heid-	Ber-			Orkild	Havana	1,622	
ritter	muda	610	4.25				
E. M. Wil-	Cay						
ley ²	Francis	735	4.10				
Finn	Rio Janeiro	2,473	12.60	A. Accame	Italy	1,947	
Frances M.	Dara	1,096	7.50	Ocland	Daigui		
Alleghany	Santiago						
Bris	Rio Janeiro		9.00				
C.C. Houck	Tampa						

¹ New. ² Thence Port Bolivar to Provi UnbeMendi Italy¹ 2,664 \$22.80²
dence with lumber \$12. ¹ West Coast. ² At or about January.

OCEAN CHARTERS

The following charters have been reported from various sources during the past week:

NORFOLK				PHILADELPHIA			
Vessel	Destination	Tons		Vessel	Destination	Tons	
Parodi ¹	Spezia	4,483	Clara	Havana	1,668		
Solice ¹	Savona	3,161	Isthmian	Rio Janeiro	3,463		
Plymouth ⁶	Spezia	5,119	Stanford	Havana	2,256		
Stavangeran ⁵	Kingston	1,027	Lysefjord	Santiago	1,250		
Venus ³	Italy	5,110	Lippitt	Point-a-Pitre			
Frontera ²	St. Georges	803	Rothwell	Boston	473		
Mobila ⁴	Pt. Spain	2,500	J. Cunco	Santiago			
Chiswick ⁴		4,500	Coniston Water	Leghorn			
Maria ⁴	Genoa	3,871	D. J. Sawyer	Tampa	600		
Neptune ²	Hamilton	800	Josey	Havana			
Bignon	Caballo	747					
M. W. Bowen ²	B. Aires	3,136					
Wellington ³	Gib	8,000					
Nereus ⁷	Gib	4,950	Platea	B. Aires	4,147		
T. Scott ⁷	Kingston	2,500	Ocland	Cuba	4,425		
Compania	Genoa	7,010	Cantabrico	Barcelona	3,041		

NEWPORT NEWS

Strathalbyn ¹	Daker	6,522	Acame	Savona	3,851
Balgray ¹	Dakar	5,854	G. Mount	Cuba	2,900
Nordstjernen ¹	Havana	3,456	St. Theodore	Genoa	7,858
Harald ¹	St. Lucia	4,500			
Tancred ⁹	St. Lucia	5,500			
Francesco ¹	Italy	5,000			

¹ Berwind-White. ² Castner, Curran & Bullitt, Inc. ³ Flat Top Fuel Co. ⁴ Pocahontas Fuel Co. ⁵ Smokeless Fuel Co. ⁶ New River Coal Co. ⁷ Hasler Bros. ⁸ Baker Whiteley. ⁹ Ches. & Ohio Coal Agency Co.

OCEAN FREIGHTS

A number of steamers have been chartered for export coal to Rio, the River Plate, Mediterranean ports, and to the West Indies, but none of these fixtures have been reported. Freight conditions are practically the same as a week ago.

To	Rate	To	Rate
Havana.....	\$3.00@3.25	Bermuda.....	\$4.25@ 5.00
Cardenas or Sagua.....	4.00	Vera Cruz.....	5.50@ 6.00
Cienfuegos.....	3.75@4.00	Tampico.....	5.50@ 6.00
Port au Spain, Trinidad.	4.75@5.00	Rio.....	13.00
St. Lucia.....	4.75@5.00	Santos*.....	13.00
Barbados.....	4.25@4.50	Montevideo.....	13.00
Kingston.....	4.75@5.00	Buenos Aires or La Plata	13.00
Curacao.....	4.25@4.50	Rosario.....	14.00
Santiago.....	4.50	West Coast of Italy.....	22.80@24.00
Guantanamo.....	4.25@4.50	Barcelona**.....	21.60
Demerara.....	6.50@7.00	Valparaiso or Callao.....	12.00@13.00
		Marseilles.....	21.60@22.80

* Consignees paying dockage dues. ** Spanish dues for account. † Quotations on Plate coal by British steamers; neutral steamers are more difficult to obtain and the rates are always higher.

W. W. Battie & Co.'s Coal Trade Freight Report.

OHIO VALLEY

PITTSBURGH

Heavy shipments of Panhandle coal to New England, the first in nearly 14 years. Demand otherwise strong, and prices on prompt coal firm, no contract prices being quoted.

Prices obtainable for free coal are still higher, and the operators have withdrawn quotations on contracts altogether. The market has been stiffening for weeks past, through the influence of heavier consumptive demand and larger buying for stocking purposes, while the most recent influence is the demand from New England. For the first time since the great anthracite strike, nearly 14 years ago, the Pittsburgh district is shipping coal to New England. The demand from that region occurs chiefly by reason of the curtailment of coastwise movement. The coal shipped to New England from this district is Panhandle coal exclusively, as it has practically the only chance of getting through, and even then the movement is somewhat uncertain.

The demand for stocking purposes has evidently increased, as consumers come to realize more clearly how absolutely necessary it is for them to be assured a supply of coal in case there is a suspension of mining. In some industrial conditions that have existed previous to a wage-scale settlement consumers have stocked only moderately, taking chances on having a reduced output for a while. This year the industrial pressure is so heavy that consumers cannot risk even a slight curtailment in operations and thus the stocking is particularly heavy.

Almost every day there are firm bids of \$1.75 for Pittsburgh district mine-run, per net ton, and there do not appear to have been any sales in the past week at under \$1.50. There are reports of even higher than \$1.75 being paid in some instances, though such sales would hardly tend to fix a regular market. Operators apparently do not expect the market to rule at any lower figure until mining is resumed on the new scale.

Demand for slack is somewhat improved, and as no stocks were accumulated at mines and the current production is rather light, owing to the relatively small production of screened coal the output of slack is less than the demand and the full mine-run price is obtainable. Prospects are that more and more mine-run will be crushed. Consumers have been crushing coal more or less for years, to obtain a better grade than can be obtained in buying slack, and operators are likely to do considerable crushing in the future. There are no quotations on nut and slack or nut. The differential on 1½-in. above ¾-in. is quite firmly maintained at 15c., against 10c. formerly quoted very frequently. As stated, operators are indisposed to quote contract prices to Apr. 1 and the market is confined to spot and prompt, as follows: Slack, \$1.50@1.75; mine-run, \$1.50@1.75; ¾-in., \$1.60@1.85; 1½-in., \$1.75@2, per net ton at mine, Pittsburgh district.

BUFFALO

Bituminous trade still panicky. Prices difficult to quote. All on the up-turn yet. Anthracite rather quiet.

Bituminous—It would be hard to find two bituminous shippers who agree within 25c. as to the state of the market, though it is readily conceded that prices are still advancing. There is quite a supply of Ohio No. 8 and Panhandle coal here, but they are going up rapidly, so that this is no longer a cheap market. Pittsburgh and Allegheny Valley grades are still out of this market, as the Eastern consumer is willing to pay a better price for them; there has been practically no Allegheny Valley coal in the open market here for a month, the Eastern consumer sometimes paying 50c. a ton more for it than No. 8 or Panhandle can be obtained at. These southwestern coals are not generally as good as either Pittsburgh or Allegheny Valley and they have sold at easier prices. The Western markets are apparently not so stiff as ours.

The chief point of speculation now is whether the present activity will continue till there is need of stocking up for the April shutdown. The general opinion is that it will, which means high prices well into the summer.

Quotations, which are purely nominal, as the real market varies widely, are:

	Pittsburgh	Allegheny Valley	Penn Smokless
Lump.....	\$3.50	\$3.30	\$3.25
Three-quarter.....	3.35	3.15	.....
Mine run.....	3.25	3.05	3.00
Slack.....	2.80	2.75	3.00

Quotations are f.o.b. cars at Buffalo or the Niagara bridges and per short ton, except east of Rochester and Kingston, Ont.

Anthracite—There is a fair demand for anthracite as a whole, chestnut being more active than the large sizes. Pea

is stronger than egg, which is quite slack. As a rule all shippers and local dealers are disappointed with the movement. A few independent shippers report small premiums here and there, but as a rule none is obtained. The Canadian trade is improving slowly and is approaching normal. This is a blow to the Buffalo market, which depends on the Canadian trade for a great part of its sales. It is stated by Lake shippers that the Northwestern trade is better than it is here.

Prices to the rail, Lake, trestle and retail trades, are as follows:

	Rail Line	Lake Vessel	Local Trestle	City Consumer
Grate.....	\$5.60	\$5.85	\$5.40	\$6.65
Egg.....	5.85	6.10	5.65	6.90
Stove.....	5.85	6.10	5.65	6.90
Chestnut.....	6.10	6.35	5.90	7.15
Pea.....	4.30	4.55	4.30	5.60
Buckwheat.....	3.25	3.50	3.25	4.50

Rail and Lake prices are per long ton, the other per short ton. Rail and Lake deliveries are f.o.b. to trestle.

TORONTO, CAN.

Demand steady and supplies rather short. Bituminous showing an advancing tendency.

The demand for coal is normal and dealers are keeping full stocks on hand, as there is a possibility of a shortage. Prices for anthracite are unchanged, but soft coal has been subject to considerable fluctuations with an upward tendency and prices are still unsettled. Pennsylvania smokeless continues very scarce. Present quotations for best grades per short ton are as follows: Retail, anthracite, egg, stove and nut, \$8; grate, \$7.15; pea, \$6.75; bituminous steam, \$5.25; screenings, \$4.25 to \$4.50; domestic lump, \$6. Wholesale f.o.b. cars at destination three-quarter lump, \$4; screenings, \$3.75. Pennsylvania smokeless lump, \$4.50; slack, \$4.25.

DETROIT

Lower temperatures create a stronger demand for domestic coal. Buying of steam grades satisfactory. Anthracite sluggish except chestnut. Lake shippers are seeking boats.

Bituminous—Orders for steam coal are steady. Small sizes are in most demand. The buying movement seems quite general among industrial and manufacturing establishments. Low temperatures with some blustery weather caused further inquiry for domestic coal. Retail yards are placing larger orders.

There is some increase in the quantity of consignment coal and probably a larger amount would be arriving except for congestion on the railroad lines and shortage of cars. Arrivals so far have not proved a serious factor in the market.

Anthracite—Chestnut is the only active size and there seems scarcely enough to supply the demand. A 25c. premium is paid in some instances. Traffic complications in the East delay shipments.

Lake Trade—Coal shippers are beginning to show more interest in closing contracts for vessels for 1916. From the present outlook, the iron ore and grain trades will take most of the vessels over the Lake Superior route. Contracts have been made at 30c. for delivery of coal at Lake Superior ports. With few cargoes for the return trip on Lake Michigan, vessel owners predict 35c. will be paid to fast unloading docks and a higher rate to others. The 1915 rate was 30c.

CINCINNATI

Continued light demand for domestic grades, with strength in nut and slack. Railroad movement is good, but the car supply remains poor.

A relatively light demand is all that has prevented a serious shortage of fuel, as the car supply has been such that a normally heavy winter demand could not have been delivered. During the greater part of last week the supply hardly exceeded 50% in some instances ranging down to 40%. The light production over the holidays, however, has relieved the situation to a marked extent, and the supply is now about 70%.

Continued mild weather has prevented any serious depletion of domestic stocks and while prices remain steady, it is only the car shortage that has saved the situation. The strongest factor in the market is nut and slack, which is naturally scarce, on account of the small production of prepared sizes, and sales of the better grades have been made as high as \$1.30 a ton f.o.b. mines.

COLUMBUS

Steam trade continues active and prices are firm. Warmer weather affects domestic demand. Prospects are considered good.

Manufacturers and public utilities are in the market for a larger tonnage and prices on all steam sizes are firmer. Railroads are also taking more coal, both for immediate use and for storage purposes which helps to strengthen the market.

In domestic circles the warm weather has caused a slight lull and retailers have not been as busy as formerly. Retail prices are also being shaded to a certain extent, but not sufficient to hurt the trade. Retailers' stocks have been increased slightly during the past few weeks. Car shortage on the West Virginia roads is having an effect on shipments and the market for Ohio coal is being gradually extended.

The holiday season has interfered with production, but not as much as in former holiday seasons.

Contracting for steam tonnage is rather active and prices are from 5 to 7½c. higher than last year. Mine-run is especially strong and the same is true of nut, pea and slack.

Prices in Ohio fields, f.o.b. mines, per short ton, are as follows:

	Hocking	Pomeroy	Eastern Ohio	Kanawha
Re-screened lump.....	\$1.60	\$1.65	.....	.....
Inch and a quarter.....	1.50	1.50	\$1.35	\$1.50
Three-quarter-inch.....	1.35	1.40	.....	1.35
Nut.....	1.25	1.30	.....	1.25
Mine-run.....	1.15	1.20	1.05	1.10
Nut, pea and slack.....	.95	1.00	.80	.80
Coarse slack.....	.85	.90	.70	.70

LOUISVILLE

Heavy demand for nut and slack and prices advancing. Reduced production over the holidays.

The strong nut and slack market is the feature of the coal situation; demand is larger than the supply, prices for the better grades ranging from 80 to 90c. and the large consumers storing it against the possibility of labor troubles later on. The probabilities are that the price will go to a dollar, or perhaps better, in the near future. In view of the high price of nut and slack, there is a tendency to cut prices on lump or to convert a lot of it into steam sizes. The holidays, high water and more mild weather have reduced the movement during the week. Sales on Eastern Kentucky block coals, f.o.b. mines, long ton basis, have ranged all the way from \$1.50 to \$1.90, with some of the fancy coals commanding as high as \$2.

COKE

CONNELLSVILLE

Coke market quiet, no holiday stringency developing. Prices not notably changed. Production decreased, shipments increased.

Provision made by consumers of coke for uncertain deliveries over the holidays appear to have been ample, and there has been no rush to buy prompt coke, either furnace or foundry, since Christmas. Evidently the operators, too, had something in reserve as reports are that in the week ending Christmas the shipments exceeded the production by about 35,000 tons.

While the coke market has not been active, prices have not receded, operators having any coke they might be able to spare holding it at old quotations, although there have been few inquiries for furnace coke to develop an actual market. Foundry coke has continued to sell at \$4 for best grades, guaranteed prompt shipment, but the sales at this figure have been light, a much larger proportion being sold at \$3.50 and \$3.75. There have been scarcely any negotiations on contract, coke and previous quotations have become largely nominal. We quote: Prompt furnace, \$3.25@3.50; contract furnace, first half, \$2.35@2.50; year 1916, \$2.25@2.35; prompt foundry, \$3.50; contract foundry, \$3@3.50, per net ton at ovens.

The "Courier" reports production in the Connellsville and lower Connellsville region in the week ended Dec. 25 at 419,000 tons, a decrease of 27,385 tons, and shipments at 454,729 tons, an increase of 13,518 tons, the shipments exceeding the production by about 35,000 tons.

Buffalo—All coke prices are active and advancing. Prices rule at \$6, for best 72-hr. Connellsville foundry, with \$4.85 for 48-hr. furnace, no stock being offered except a little off-grade high-sulphur at varying prices about \$4.50.

Chicago—All grades of coke are very active. Domestic sizes are much stronger, and the supply of foundry and furnace is short of the demand. Prices per net ton, f.o.b. cars Chicago, are as follows: Byproduct, foundry, \$5.25@5.75; byproduct, domestic, \$4.95; Connellsville, \$5.25@5.50; Wise County, \$5.25@5.50; gas coke, \$4@4.25.

St. Louis—A healthier tone was manifest in the local coke market the past week. The demand for industrial purposes was above expectations. Domestic deliveries have increased and dealers report the outlook for the next few weeks to be exceptional. No changes were noted in prices, which are as follows, per net ton, f.o.b. cars St. Louis: Byproduct (all sizes), \$5; gas coke (lump and egg), \$4.25; petroleum (lump) \$6.75.

MIDDLE WESTERN

GENERAL REVIEW

Light production during holiday season. Steam coals very strong. Domestic prices well held. Eastern coals bettered.

The coal trade has been comparatively quiet during the holiday week. Light production of mines is reported due to lack of labor. The smaller output has had a beneficial effect on prices, particularly steam sizes. Screenings are soaring higher than ever, Illinois fine coal in some cases being sold at \$1 per ton plus storage cost. The demand for domestic sizes from the country dealers has receded slightly.

Regularity of steam-coal buying continues to be a prominent feature of Western trade. A large tonnage is going into storage, being mainly absorbed by the railroads and large industrial interests. How long this absorption of storage tonnage will continue is problematical, but its influence on quotations has been quite apparent. Estimates are that the large consumers will have placed in storage when contemplated stocks are all on the ground, more than 7,000,000 tons of steam sizes. The weather has been moderate, and railroads have had no difficulty in supplying cars and moving coal from most Western mines except to Northwestern points, where a sharp demand exists owing to zero weather. Inasmuch as storage supplies at many Western and Northwestern points are very low, a continuance of cold weather promises strong demand at full circular prices, or better, for some time to come.

Shippers comment upon unusual conditions prevailing at present in the coal markets, viz: Lack of normal absorption by retailers and domestic consumers and reversal of this condition on the part of steam users, who are heavy purchasers and who have been the cause of the marked uplift in prices.

ST. LOUIS

Screenings the most active size. Steam grades in much stronger demand. Domestic coals improving in spots. Mine operations increased.

The arrival of snow and colder weather gave much encouragement and a healthier tone to the market. The demand for screenings was in excess of the supply with the result that prices were advanced another 10c. per ton.

Indications point to further early advances. Steam sizes have shown marked improvement and within a short time the supply will fall short of demand. Local domestic consumption the past week has been unusually light, owing to the inability of the dealers to make deliveries in any volume because of the slippery streets. The last day or two, however, dealers have again entered the buying ring. Country orders have been coming in quite rapidly. The car supply is fairly good and operating time at the mines is heavier than for many months. There are many storage orders being placed for immediate delivery.

Prices, per net ton, f.o.b. cars at mines, are as follows:

	Williamson and Franklin	Staunton and Mt. Olive	Montgomery Co.	Intermediate	Standard
8 in. lump				\$1.25	\$1.10 @ 1.15
6 in. lump	\$1.50	\$1.25	\$1.25	1.25	1.10 @ 1.15
3 in. lump	1.40	1.15		1.25	
2 in. lump	1.35	1.15		1.20	.95 @ 1.00
1½ in. lump	1.30		1.10	1.10	.95 @ 1.00
6x3 in. egg	1.40			1.25	1.05 @ 1.15
6x1½ in. egg	1.30		1.20	1.10	.95 @ 1.00
No. 1 nut	1.20		1.10	1.10	.90 @ 1.00
No. 2 nut	1.10	.90		1.00	.90 @ 1.00
Mine run	1.10	1.00	1.05	1.05	.90 @ .95
Screenings	.85	.80	.80	.80	.75 @ .80
No. 1 washed egg	1.50	1.50		1.50	1.40
No. 2 washed nut	1.35	1.25		1.25	1.25
No. 3 washed nut	1.25	1.20		1.20	1.20
No. 4 washed pea	1.25	1.10		1.10	1.10
No. 5 washed slack	.85	.80		.80	.80

CHICAGO

Illinois screenings still ascending. Domestic demand improved. Anthracite chestnut in strong demand.

Everything in the smaller sizes from the Southern Illinois mines has sold freely, screenings bringing from 90 to 95c. per ton on the average, and some sales being made at \$1. The accumulation of coarse sizes has been reduced. Shipments to Western and Northwestern points have been brisk at full schedule prices from all Franklin and Williamson County mines. Predictions are freely made that if the present volume of orders continue \$2 coal will be shipped from Southern Illinois mines before the middle of January.

Domestic sizes from the Springfield district have been rather slow this week, but screenings have been stronger at around 90c.

Indiana mine run is strong, domestic sizes have bettered, and steam grades show further stiffening. Knox County steam lump, mine run and screenings are very active. The demand for Clinton 3d and 5th vein domestic lump is steady, with screenings and steam lump in strong demand. No. 6 domestic sizes have been quiet this week. Knox and Clinton County screenings have frequently touched the dollar.

Smokeless mine run is rather scarce, but lump and egg is in plentiful supply. No demurrage coal is now on hand. Smokeless prices are in better shape than they have been for several weeks past.

Hocking lump has been strong at maximum prices, with shipments scarce. Splints continue to sell at high prices, the domestic sizes being in the best situation because shippers are not encumbered by prior orders taken at higher figures.

Kentucky coals, while absorbed more rapidly, have shown no particular change in prices. Domestic sizes vary from \$1.60 to \$2.40 according to the district from which they are mined and the preparation.

Anthracite trade is fair. Movement of all-rail coal to Chicago has been very slow, and two or three weeks seems to be the time to get a shipment through to destination. Buying by the public is on a hand to mouth basis, but prices are well maintained notwithstanding sluggish conditions. Chestnut as usual is still the leader, and shipments hardly equal orders.

Quotations in the Chicago market are as follows, per net ton f.o.b. mines:

	Williamson and Franklin Co.	Springfield	Sullivan	Clinton	Knox and Greene Cos.
Lump.....	\$1.65@1.75	\$1.50@1.75	\$1.50@1.65	\$1.60@1.75	\$1.50@1.60
Steam lump 2½ and 3-in. lump.....	1.35	1.25@1.35	1.30@1.35	1.25@1.35	1.35@1.40
1½-in. lump.....			1.35@1.40	1.35@1.45	1.30@1.45
Egg.....	1.65@1.75	1.40@1.65	1.25@1.30	1.35@1.50	1.35@1.50
Nut.....	1.60@1.65	1.00@1.15	1.20@1.35	1.10@1.25	
No. 1 washed.....	1.75		1.50		
No. 2 washed.....	1.35@1.40		1.40		
No. 1 nut.....	1.65@1.75				
No. 2 nut.....	1.50				
Mine-run.....	1.10@1.15	1.05@1.10	.95@1.05	.90@1.10	1.00@1.05
Screenings.....	.90@.95	.85@.90	.80@.85	.85@.95	.90@.95
	Harriburg & Saline Co.	E. Kentucky	Pocah. & Penna. W. Va. Smok'l.	Smokeless	Hocking
Lump.....	\$1.60@1.75	\$1.65@2.40	\$1.75@2.00	\$1.75@2.25	\$1.60@1.75
1½-in. lump.....	1.25@1.35	1.30@1.40			1.35@1.50
Egg.....	1.50@1.60	1.35@1.85	1.85@2.00	1.75@2.25	1.40@1.60
Nut.....	1.25@1.60	1.50@1.75	1.50@1.65		1.30
No. 1 nut.....	1.60@1.75				
No. 2 nut.....	1.40@1.50				
Mine-run.....	1.15	1.10@1.20	1.25@1.40	1.40	1.10@1.25
Screenings.....	.85@.95	.85@.90			.85@.95

KANSAS CITY

A shortage of steam coal has developed. No new contracts are being made. Prices remain steady.

Unfortunately many plants did not begin soon enough to provide additional tonnage to carry them through the holidays. None are closing down, however, although a great many are running on a supply furnished from day to day. There have been no changes in prices although the market is very strong. Cold weather has set in and domestic consumption is on the increase. All mines are running on full time.

PRODUCTION AND TRANSPORTATION STATISTICS

CHESAPEAKE & OHIO RY.

The following is a comparative statement of the coal and coke traffic from the New River, Kanawha and Kentucky districts for October and the four months of the fiscal years 1914 and 1915, in short tons:

Destination	October		Four Months	
	1915	%	1914	%
Tidewater.....	382,865	18	377,280	19
East.....	230,150	10	235,063	12
West.....	1,368,550	63	1,326,240	65
Total.....	1,981,565		1,939,323	
From Connections				
Bituminous.....	193,691	9	87,266	4
Anthra. (local).....	316		15	
Anthracite.....	1,418		1,274	
Total.....	2,176,990	100	2,027,878	100
Coke.....	33,983		8,713	

VIRGINIAN RAILWAY

Total shipments of coal over the Virginian Ry. for October amounted to 359,226 tons, which compares with 393,055 tons for the previous month and 341,703 tons for October of 1914.

SAULT STE. MARIE CANAL

Total shipments of anthracite through the Sault Ste. Marie for the season of 1915, amounted to 2,030,730 tons, as compared with 2,240,505 in 1914, or a loss of 209,775 tons, about 9%. Soft-coal shipments declined from 12,246,716 in 1914, to 11,326,328 tons for 1915, a loss of 920,388 tons, or 8%.

EXPORTS

Exports of domestic coal and coke from the United States, and bunker coal laden on vessels engaged in the foreign trade at the specified districts, during the month of October 1915, were as follows:

	Anthracite	Bituminous	Coke
Maine and New Hampshire.....	1,642		
Maryland.....		139,652	7,319
Massachusetts.....	117	38	
New York.....	16,148	1,075	135
Philadelphia.....	18,908	87,775	3,538
Porto Rico.....		140	
Virginia.....		447,556	4,169
Florida.....		1,705	
Mobile.....		1,065	
New Orleans.....	30	1,206	12
Arizona.....		388	4,600
El Paso.....		5,404	
Laredo.....		2,722	13
Alaska.....		4	
San Francisco.....		145	1
Southern California.....		10	
Washington.....		464	7,999
Buffalo.....	156,743	194,822	43,818
Dakota.....	2,885	2,905	440
Duluth & Superior.....	248	6,590	130
Michigan.....		46,678	10,741
Ohio.....	129	738,544	359
Rochester.....	54,481	78,255	471
St. Lawrence.....	109,075	24,947	2,074
Vermont.....	858	360	37
Total.....	361,264	1,782,450	85,856

BUNKER COAL

Districts	Gross Tons	Districts	Gross Tons
Maryland.....	47,244	Philadelphia.....	36,800
New York.....	274,423	Virginia.....	137,681

PENNSYLVANIA RAILROAD

The following is a statement of shipments over the P. R.R. Co.'s lines east of Pittsburgh and Erie for November of the current year and the eleven months of 1914 and 1915, in short tons:

	November 1915	November 1914	Eleven Months 1915	Eleven Months 1914
Anthracite.....	1,194,794	194,794	9,882,584	10,071,433
Bituminous.....	4,307,041	3,446,436	40,290,407	41,287,270
Coke.....	1,220,149	599,750	10,824,573	8,877,618
Total.....	6,721,984	4,240,980	60,997,564	60,236,321

FOREIGN MARKETS

GREAT BRITAIN

Exports—British exports for November and the first eleven months of the past three years were as follows:

To	November 1913	November 1914	November 1915	Eleven Months 1913	Eleven Months 1914	Eleven Months 1915
Russia.....	379,347	1,773	1,001	5,598,119	3,087,805	42,559
Sweden.....	404,540	378,524	214,014	4,183,554	3,959,216	2,488,208
Norway.....	207,766	177,735	165,480	2,096,394	2,282,638	2,457,669
Denmark.....	244,970	252,457	173,384	2,739,555	2,833,642	2,914,477
Germany.....	677,074			8,296,487	5,256,765	
Netherlands.....	157,610	65,628	154,703	1,869,803	1,631,581	1,655,036
Belgium.....	162,091	997		1,890,316	1,167,546	
France.....	1,031,427	1,036,949	1,388,211	11,676,356	11,083,759	16,215,273
Portugal ¹	101,724	96,152	66,861	1,226,596	1,084,772	938,352
Spain ²	280,749	132,730	190,164	3,354,902	2,792,016	1,909,717
Italy.....	784,135	603,161	443,432	8,844,673	7,865,777	5,405,964
Aus. Hung.....	78,066			977,906	564,362	
Greece.....	75,573	23,783	12,280	666,857	534,163	309,198
Roumania.....	28,822			226,203	218,218	
Turkey.....	61,156			307,838	429,506	10,324
Egypt ³	113,832	44,039	53,620	1,174,495	856,362	846,835
Algeria.....	12,838	1,502	36,046	213,828	158,954	192,582
Portugal ⁴	49,052	3,776	7,248	542,003	374,549	46,288
Chile.....	137,971	63,350	23,322	1,731,663	1,101,564	409,878
Brazil.....	56,039	14,826	29,012	667,793	541,491	299,543
Uruguay.....	290,262	152,775	129,004	3,312,713	2,688,565	1,454,997
Argentina.....	16,667	13,475	7,719	153,226	153,015	117,103
Channel Is.....	40,897	20,493	37,730	320,999	274,815	334,258
Gibraltar.....	73,060	9,514	5,113	621,489	333,748	132,413
Malta.....	315,300	94,412	103,388	2,803,630	2,456,070	1,258,176
Aden.....	5,981		15,006	154,540	135,817	127,371
India.....	11,955	11,423	686	152,003	151,207	24,486
Ceylon.....	15,420	4,807	4,757	213,542	244,678	43,487
Miscell. ⁵	99,080	75,879	40,590	1,163,182	1,078,205	553,335
Coke.....	126,307	100,202	110,946	1,115,317	1,075,406	909,134
Briquettes.....	163,087	46,737	55,585	1,874,952	1,534,680	1,143,245
Total.....	6,202,798	3,427,099	3,469,302	70,160,934	57,951,092	42,299,908
Bunker.....	1,755,090	1,249,955	931,614	19,189,501	17,287,364	12,677,086

¹ Includes Azores and Madeira. ² Including Anglo-Egyptian Sudan. ³ And dependencies. ⁴ And Canaries. ⁵ West Africa.

Note—The figures in the above table do not include Admiralty and certain other shipments.

Coal Contracts Pending

The purpose of this department is to diffuse accurate information of prospective purchases and prices with a view to affording equal opportunity to all, promoting market stability and inculcating sound business principles in the coal trade.

Supplemental Notes

Under this heading additional or supplemental information regarding old contracts appears, together with the page number of the original notice.

1651—Norfolk, Va.—Bids have been received on this contract (Vol. 8, p. 871), which provides for furnishing the United States engineers with approximately 3,000 tons of bituminous coal as follows: Crozier Pocahontas Co., C. G. Blake Co., Flat Top Fuel Co., \$2.53 per ton; Chesapeake & Ohio Coal and Coke Co., Nothingham & Wrenn Co., \$2.50; Johns Bros., Inc., \$2.48; Pocahontas Fuel Co., \$2.57½; Castner, Curran & Bullitt, Inc., \$2.39. Address United States Engineers' Office, Custom House, Norfolk, Va. (No. 550, Vol. 7, pp. 709, 1004).

1677—Chicago, Ill.—The city engineers compute the lowest bids on this contract (Vol. 8, pp. 1043, 1087), which provides for furnishing the various departments with coal during the ensuing year, to be as follows:

BICKETT C. & C. CO.—Sewage Pumping Station, Chicago Avenue Pumping Station, 14th Street Pumping Station, Harrison Street Pumping Station, 68th Street Pumping Station, City Hall Bureau.

E. PUTTKAMMER—Springfield Avenue Pumping Station, 22nd Street Pumping Station, Central Park Avenue Pumping Station.

ENDER C. & C. CO.—Roseland Pumping Station, Department of Health (District No. 4).

CONSUMERS CO.—Division of Bridges and Harbor, Police Department (Districts Nos. 1, 2, 3, 4 and 5), Fire Department (Districts Nos. 1, 2, 3, 4 and 5), Department of Health (Districts Nos. 1, 2, 3 and 5), Bureau of Streets (Districts Nos. 1, 4 and 5), Water Pipe Extension Division (Districts Nos. 3 and 5).

PILSEN C. CO.—Bureau of Streets (District No. 2), Water Pipe Extension Division (Districts Nos. 1, 2 and 4).

ALBANY C. CO.—Bureau of Streets (District No. 3).

J. J. CONNORS—Rogers Park Pumping Station, Lake View Pumping Station.

Address City Engr. John Erickson, Bureau of Engineering, Department of Public Works, Chicago, Ill. (No. 312, Vol. 7, pp. 488, 666, 748, 915).

No. 1731—New Orleans, La.—Four New Orleans firms bid on this contract (p. 999), which provides for furnishing the City Government with its annual coal supply, about 15,000 short tons, as follows:

Kind of Coal	Names of Bidders			
	Cahaba R. C. Co.	W. G. Coyle & Co.	Jung & Sons Co.	Tenn. C. I. & R.R. Co.
Fancy domestic lump (carbon hill)	\$3.74			
Domestic egg size coal (carbon hill)	3.40			
Pratt mine run	3.00			
Pratt mine run (ear lots)	2.75			
Cahaba or magnolia mine run, ear load lots	2.85			
Sipsey O to 3" washed steam coal		\$3.12½		
Sipsey No. 2 lump (3 to 5"—egg size)			4.27	
Sipsey fancy lump (5 to 12")			4.82	
Pratt steam coal				\$3.20
Screened lump No. 1				3.55
Screened lump No. 2				3.65
Pratt steam lump for City Hall Annex, House of Detention and other public buildings				\$3.50
Pratt steam lump for White Waifs' Home				4.00
Pratt Steam Lump for Colored Waifs' Home				3.75
Cahaba, egg for City Hall Annex, House of Detention and other public buildings				3.60
Cahaba egg for White Waifs' Home				4.10
Cahaba egg for Colored Waifs' Home				3.85

Forty cents per load to be added to bids of the Cahaba Red Ash Coal Co. and Tennessee Coal, Iron and R.R. Co., for ferrage if coal is to be delivered in Algiers.

Address, Commissioner of Police and Public Buildings, Room 27, City Hall Building, New Orleans, La.

1755—St. Louis, Mo.—Bids were received on this contract (Vol. 8, p. 1043), which provides for furnishing the U. S. Government with about 30,000 tons of coal, as follows:

Bidder	Kind	Dry B.t.u.	Car Lot	St. Louis		
				On Board	Alongside	Barge
Southern C. & C. & New Baden M. Co.	Shiloh	12,000	1.62½	\$1.70	\$1.45	\$1.40
Farmers & Mer- Security Schants Transp. Co.		12,500	1.73	1.97	1.83	1.63
Bald Eagle M. Co. Winkle O'Gara C. Co.	Harrisburg	13,000	1.62½			
Monongahela River Consol. C. Co.						
Yough. Cypress Greenville						
White River						
Vicksburg						
Natchez						
Memphis						
Cairo						
White River						

West Kentucky Coal Co.

On Board

Alongside

Barge

\$3.00

\$2.80

3.50

3.25

3.50

3.25

Address United States Engineers' Office, Custom House, St. Louis, Mo. (No. 26, Vol. 6, pp. 972, 1009, 189).

Major Willing, in charge, will recommend that the contracts be awarded as follows: On car delivery, St. Louis, O'Gara Coal Co., Chicago, 6.7481c. per million B.t.u.; aboard boat, Southern Coal, Coke and Mining Co., St. Louis, 7.8666c. per million B.t.u.; alongside boat, Southern Coal, Coke and Mining Co., 6.7125c. per million B.t.u.; f.o.b. barge, Southern Coal, Coke and Mining Co., 6.4791c. per million B.t.u. The contract for delivery to Cairo and the other points below Cairo will be recommended for award to the Monongahela River Consolidated Coal and Coke Co., on Cypress Creek, Ky., coal, with the exception of Greenville, Miss., for which the West Kentucky Coal Co. is the lowest bidder, with Tidewater coal. Delivery to all points above Cairo will be made by the Southern Coal, Coke and Mining Co. under its bid for the St. Louis delivery.

1766—Philadelphia, Penn.—The requirements on this contract (p. 1044), which covers the requirements of the Link-Belt Co., are 5,000 to 6,000 tons. The contract has been held by the Philadelphia & Reading Coal and Iron Co. for a number of years, and will probably be renewed with that concern for the first quarter of 1916. Address Pur. Agt. A. P. Haines, Link-Belt Co., Nicetown, Philadelphia, Penn.

1784—Bridgeport, Penn.—This contract (Vol. 8, p. 1088), which provides for furnishing the Diamond State Fiber Co. with their fuel requirements, was erroneously headed Connecticut instead of Pennsylvania. Address Pur. Agt. Yates, Diamond State Fiber Co., Bridgeport, Penn.

1835—Philadelphia, Penn.—Bids on this contract (Vol. 8, p. 1089, Vol. 9, p. 36), which provides for furnishing the City Government with coal, have been opened and preliminary examinations indicate that tenders are 15 to 20% higher than those paid on this business last year. Only about \$700,000 is available for purchasing coal, which is understood to be only sufficient to last until about July. Address Dir. Herman Loeb, Dept. of Supplies, City Hall, Philadelphia, Penn.

New Business

Volume and page number in parentheses at the end of an item indicate where the previous announcement, bids and awards on that contract may be found.

1864—Croswell, Mich.—The City Government is receiving bids for furnishing approximately 1,200 tons of West Virginia egg or nut coal, deliveries to be made during the ensuing year. Address Dr. Learamount, Croswell, Mich.

1865—Chicago, Ill.—Clapp, Norstrom & Riley will purchase their fuel requirements involving approximately 200 tons of Illinois lump coal in the open market, as may be required. Address Pur. Agt. Scott, Clapp, Norstrom & Riley, 14 S. Canal St., Chicago, Ill.

1866—Philadelphia, Penn.—The Episcopal Hospital is in the market for its annual fuel requirements involving approximately 4,000 tons of anthracite buckwheat coal, deliveries to be made during the succeeding twelve months. Address Superintendent, Episcopal Hospital, Front St. and Lehigh Ave., Philadelphia, Penn.

1867—International Falls, Minn.—The Board of Commissioners at this place received bids until Jan. 4, for furnishing the Court House buildings with coal as may be required during the coming year. Address Audr. L. H. Slocum, International Falls, Minn.

1868—Philadelphia, Penn.—William Sellers & Co. is in the market for its annual fuel supply, involving approximately

1,000 tons of anthracite buckwheat coal. Address Purchasing Agent, William Sellers & Co., 16th and Hamilton St., Philadelphia, Penn.

1869—Chicago, Ill.—The Lehon Co. will purchase its requirements involving approximately 35 cars of Franklin County, Illinois, 6-in. lump coal in the open market as may be required. Address Pur. Agt. J. H. Shoop, Lehon Co., West 45th St. and South Western Ave., Chicago, Ill.

1870—Media, Penn.—The Borough Government at this place is receiving bids for furnishing approximately 1,200 tons of anthracite buckwheat coal, deliveries to be made during the current year. Address Clk. Edward Minton, Media, Penn. (No. 1646, Vol. 8, pp. 870, 959.)

1871—Philadelphia, Penn.—H. W. Butterworth & Sons Co. is in the market for its annual fuel requirements involving approximately 1,200 tons of anthracite pea coal. Address Purchasing Agent, H. W. Butterworth & Sons Co., York and Cedar St., Philadelphia, Penn.

1872—Jasper, Ind.—The County Commissioners at this place received bids until Jan. 3 for furnishing coal as may be required at the Court House, County Jail, and Poor Asylum. Address County Clerk, Jasper, Ind.

1873—Philadelphia, Penn.—The Rieger & Gretz Brewing Co. is in the market for its annual fuel supply involving approximately 1,200 tons of anthracite pea coal, deliveries to be made during the present year. Address Purchasing Agent, Rieger & Gretz Brewing Co., Germantown Ave. and Oxford St., Philadelphia, Penn.

1874—Chicago, Ill.—The Concrete Steel Products Co. is purchasing its fuel requirements, involving approximately 150 tons of Pocahontas mine-run coal, in the open market. Address Purchasing Agent, Concrete Steel Products Co., 332 S. Michigan Ave., Chicago, Ill.

1875—Wilmington, Del.—James Oberly, brick manufacturer, is in the market for his annual fuel requirements involving approximately 400 tons of broken coal. Address James Oberly, Wilmington, Del.

1876—Philadelphia, Penn.—The Nazel Engineering and Machine Works is in the market for its annual fuel supply involving approximately 600 tons of anthracite rice coal, deliveries to be made during the ensuing year. Address Purchasing Agent, Nazel Engineering and Machine Works, Fifth and Luzerne Sts., Philadelphia, Penn.

1877—Chicago, Ill.—The F. J. Lewis Manufacturing Co. is purchasing its fuel requirements involving approximately 4,000 tons of Illinois egg coal in the open market and are receiving bids on the business. Address Pur. Agt. C. C. Bulger, The F. J. Lewis Manufacturing Co., 2513 So. Robey St., Chicago, Ill.

1878—Harvey, Ill.—The Whiting Foundry Equipment Co. will buy its annual fuel requirements amounting to about 5,000 tons of Southern Illinois screening in the open market. Address Pur. Agt. T. S. Hammond, Whiting Foundry Equipment Co., Harvey, Ill.

1879—Boston, Mass.—The Light, Heat and Power Co., contracts for the fuel requirements of its 13 gas companies, involving approximately 12,000 tons of coal about Feb. 1. West Moreland $\frac{3}{4}$ -in. screened gas coal is used and deliveries are made to Gloucester, Mass., by water and to Northampton and Milford by rail. Address Pur. Agt. H. L. Ogden, Light, Heat and Power Co., 77 Franklin St., Boston, Mass.

1880—Chicago, Ill.—American Saw and Tool Works, contracts for its annual fuel requirements, involving two or three tons of Pocahontas mine-run per day, about Jan. 15. Address Pur. Agt. W. Fries, American Saw and Tool Works, 2431 W. 14th St., Chicago, Ill.

1881—Philadelphia, Penn.—Riehle Brothers Testing Machine Co. usually contracts for its annual fuel requirements involving approximately 1,500 tons of anthracite pea and steamboat coal about the first of the year. Address Purchasing Agent, Riehle Brothers Testing Machine Co., 9th and Master St., Philadelphia, Penn.

1882—Lima, Ohio.—The Western Ohio Railway Co. have sent out requests for quotations on approximately 1,500 tons of West Virginia nut and slack coal. Address Pres. and Gen. Mgr. F. D. Carpenter, The Western Ohio Railway Co., Lima, Ohio.

1883—Chicago, Ill.—Adam Schaaf, who is purchasing his fuel requirements in the open market at the present time, is considering contracting for his annual supply involving approximately 200 tons of Illinois screening, and is receiving quotations for same. Address Pur. Agt. C. Clute, Adam Schaaf, 1020 So. Central Park, Chicago, Ill.

1884—Philadelphia, Penn.—The Robmann Real Estate Co. requires approximately 1,000 tons of anthracite buckwheat coal per annum for which it will contract early in the current

month. Address Treasurer, Rebmann Real Estate Co., 13th and Willow St., Philadelphia, Penn.

1885—St. Louis, Mo.—The Mound City Ice and Cold Storage Co. is receiving bids for its annual fuel requirements involving between 500 and 1,000 tons of screening per month. The present contract expires Feb. 1. Address Purchasing Agent, The Mound City Ice and Cold Storage Co., Ninth and Branch St., St. Louis, Mo.

1886—Chicago, Ill.—The Crown Maltose Co. is in the market for approximately 1,000 tons of coke. Address Pur. Agt. T. J. Coster, Crown Maltose Co., 116 So. Greene St., Chicago, Ill.

1887—Philadelphia, Penn.—The Philadelphia Hardware and Malleable Iron Works will contract the early part of the current month for its annual fuel requirements amounting to about 2,500 tons of anthracite broken and pea coal. Address Treasurer, Philadelphia Hardware and Malleable Iron Works, Ninth and Jefferson St., Philadelphia, Penn.

1888—Wilmington, Del.—The E. I. du Pont de Nemours Co. is in the market for its annual fuel supply involving approximately 1,000 tons of steamboat and pea coal. Address Pur. Agt. J. B. Niles, E. I. du Pont de Nemours Co., Wilmington, Del.

1889—Chicago, Ill.—The Paul J. Daemicke Co. will purchase its fuel requirements, involving about one car of No. 2 nut coal per week, in the open market as required. Address Pur. Agt. Henning, Paul J. Daemicke Co., 321 W. So. Water St., Chicago, Ill.

1890—Cheboygan, Mich.—M. D. Olds is in the market for approximately 150 tons of West Virginia mine-run coal, deliveries to start next spring. Address M. D. Olds, Cheboygan, Mich.

1891—Philadelphia, Penn.—The Acme Tea Co. contracts for its annual fuel requirements, involving approximately 8,000 tons of anthracite buckwheat, about Jan. 1. Address Pur. Agt. Acme Tea Co., 8th and Willow St., Philadelphia, Penn.

1892—Johnstown, Penn.—Bids were received until noon Jan. 5, for furnishing the Municipal Hospital and the several fire houses with coal as required during the fiscal year, beginning the first Monday of the month. Bids should be submitted on the short ton basis. Address Supt. of Accounts and Finance, Nathan Miller, Johnstown, Penn.

1893—Chicago, Ill.—The Chicago Milling Co. is purchasing its fuel requirements in the open market, and is open to a proposition to contract. They require about one car of Illinois mine-run coal per month. Address Purchasing Agent, Chicago Milling Co., 1371 S. Park Ave., Chicago, Ill.

1894—Cedar Rapids, Iowa.—The Southeastern Coal Co. is receiving bids for a prompt shipment of approximately 1,000 tons of West Virginia domestic splint lump coal. Address W. O'Rourke, Southeastern Coal Co., Cedar Rapids, Iowa.

1895—Philadelphia, Penn.—George D. Wetherill & Co., Inc., is in the market for its annual fuel supply, involving approximately 1,000 tons of anthracite buckwheat coal. Address Pur. Agt. George D. Wetherill & Co., Inc., Harold and Moyer St., Philadelphia, Penn.

1896—Dayton, Ohio.—The Dayton Power and Light Co. is in the market for a prompt shipment of approximately 2,500 tons of West Virginia nut and slack coal. Address Pur. Agt. C. M. Peffley, Dayton Power and Light Co., Dayton, Ohio.

1897—Chicago, Ill.—The Amalgamated Roofing Co., which consumes about 150 tons of Southern Illinois mine-run coal per month, will purchase between now and Feb. 1, sufficient coal to cover their annual requirements. Address Pur. Agt. F. K. Milligan, Amalgamated Roofing Co., 431 So. Dearborn St., Chicago, Ill.

1898—Philadelphia, Penn.—The United Coal Co. is in the market for a prompt shipment of 4,700 tons of West Virginia mine-run coal, deliveries to be made at tidewater. Address The United Coal Co., Philadelphia, Penn.

1899—Detroit, Mich.—The United Fuel and Supply Co. is in the market for 5,000 tons of nut and slack and 2,000 tons of West Virginia mine-run coal, deliveries to be made in equal monthly proportions, between Mar. 1 and Dec. 1. Address Vice-Pres. A. Y. Malcomson, The United Fuel and Supply Co., Detroit, Mich.

1900—Chicago, Ill.—The Calumet Concrete Construction Co. is purchasing its fuel requirements in the open market and require a prompt tonnage of 200 tons of Pocahontas mine-run. Address Pur. Agt. E. C. Chase, Calumet Concrete Construction Co., 100 W. 115th St., Chicago, Ill.

1901—Philadelphia, Penn.—The Germantown Hospital usually contracts for its annual fuel requirements, involving about 3,500 tons of buckwheat, during the first part of the

year. Address Pur. Agt., Germantown Dispensary and Hospital, Penn and Chew St., Germantown, Philadelphia, Penn.

1902—New Castle, Del.—The Bethlehem Steel Co. is in the market for its annual requirement of buckwheat coal, involving approximately 3,500 tons. The coal is for use at the Projectile Plant. Address Pur. Agt., Bethlehem Steel Co., South Bethlehem, Penn.

1903—Philadelphia, Penn.—The House of the Good Shepherd is receiving bids on its annual fuel supply, involving approximately 1,000 tons of buckwheat coal. Address the Mother Superior, House of the Good Shepherd, Germantown, Penn.

1904—Fort Worth, Tex.—The receiver for the Scott Estate purchases approximately 600 tons of steam coal per month which costs from \$1.10 to \$1.25 per ton at the mine. The coal is received in carload lots and delivered by wagon. Address Norman E. Nelson, Scott Block, Fort Worth, Tex.

1905—Philadelphia, Penn.—The Pennsylvania Warehousing and Safe Deposit Co. require about 1,000 tons of anthracite pea and buckwheat coal per annum, which they usually contract for about the first of the year. Address Treasurer, Pennsylvania Warehousing and Safe Deposit Co., 113 So. Third St., Philadelphia, Penn.

1906—New York, N. Y.—Bids will be received by the Central Purchasing Committee until noon, Jan. 14, for furnishing and delivering 80,673 tons of anthracite and 27,220 tons of semi-bituminous coal for use at the Fire Department, Department of Street Cleaning and Bridges, Armory Board, Department of Water Supply, Gas and Electricity, Bellevue and Allied Hospitals, Public Charities, Correction, and parks in Manhattan and Richmond. Deliveries are to be completed on or before Apr. 30 of the current year. Address Contract Clerk, Room 1230, Municipal Bldg., New York, N. Y. (Vol. 7, pp. 877, 918, 955, 1004, 1048, 1083. Also see same contract for a later period below, No. 1914.)

1907—Philadelphia, Penn.—Becker, Smith & Page are in the market for its annual fuel supply, involving approximately 1,000 tons of buckwheat coal. Address Secretary Becker, Smith & Page, Swanson St. and Snyder Ave., Philadelphia, Penn.

1908—Laurel Springs, N. J.—The Clementon Township United Electric Co. is receiving bids for its annual fuel supply, involving approximately 1,200 tons of buckwheat coal. Address Secretary Clementon Township United Electric Co., Laurel Springs, N. J.

1909—Philadelphia, Penn.—Carey Brothers Wall Paper Manufacturing Co. require approximately 1,800 tons of anthracite pea coal per annum, for which they usually contract about the first of the year. Address Gen. Mgr., Carey Bros. Wall Paper Mfg. Co., 2228 North 10th St., Philadelphia, Penn.

1910—Fort Worth, Tex.—Mead Teas & Co., the agent for the Continental Bank Bldg. at this place purchases about 75 tons of slack coal at this time. Deliveries are made by wagon and the usual price is \$4 to \$4.75 per ton delivered. Address Mead Teas & Co., 714 Houston St., Fort Worth, Tex.

1911—Philadelphia, Penn.—The Orthopaedic Hospital usually contracts for its annual fuel supply amounting approximately 1,500 tons of buckwheat coal per annum, about Jan. 1. Address Purchasing Agent, Philadelphia Orthopaedic Hospital, 17th and Summer St., Philadelphia, Penn.

1912—Chester, Penn.—The Seaboard Steel Casting Co. usually contracts for its annual fuel supply involving approximately 2,500 tons of anthracite broken coal about Jan. 1. Address Treasurer, Seaboard Steel Casting Co., Chester, Penn.

1913—Philadelphia, Penn.—The Harrison Safety Boiler Works at this place is in the market for its annual fuel supply involving approximately 2,000 tons of anthracite buckwheat coal. Address Harrison Safety Boiler Works, 17th and Allegheny Ave., Philadelphia, Penn.

1914—New York, N. Y.—The Central Purchasing Committee will receive bids until noon Jan. 14, for furnishing and delivering 108,672 tons of anthracite, 7,830 tons of semibituminous and 300 tons of gas coal for use at the Army Board, Bellevue and Allied Hospitals, Departments of Bridges, Correction, Docks and Ferries, Fire, Parks in Manhattan, Richmond, Bronx and Brooklyn, Public Charities, Water Supply, Gas and Electricity, during the period from Apr. 1 to Nov. 30, of the current year. Address Contract Clerk, Room 1230, Municipal Bldg., New York, N. Y. (See also contract above No. 1906.)

1915—Philadelphia, Penn.—Yewdell & Jones Co. usually contract for their annual fuel supply at about this time. They require approximately 1,500 tons of buckwheat coal. Address Purchasing Agent Yewdell & Jones Co., 54th and Poplar St., Philadelphia, Penn.

1916—New York, N. Y.—The Commissioner of Docks and Ferries will receive bids until noon, Jan. 12, for furnishing

and delivering 2,000 tons of buckwheat No. 3. Deliveries are to be completed in 30 days. Address Comr. R. A. C. Smith, Dept. of Docks and Ferries, Pier "A," foot of Battery Pl., New York, N. Y. (No. 1583, Vol. 8, pp. 700, 828.)

1917—Philadelphia, Penn.—Messrs. Armour & Co., beef packers, usually contract for their annual fuel supply involving approximately 1,000 tons of anthracite pea coal about Jan. 1. Address Purchasing Agent, Armour & Co., 917 Noble St., Philadelphia, Penn.

1918—Wilmington, Del.—The Wilmington Gas Co. is in the market for its annual fuel supply, involving approximately 12,000 tons of broken coal. Address General Manager, Wilmington Gas Co., Wilmington, Del.

1919—Philadelphia, Penn.—The Philadelphia Lawn Mower Co. is receiving bids for its annual fuel supply estimated at about 1,000 tons. Pea coal is used. Address President, Philadelphia Lawn Mower Co., 31st and Chestnut St., Philadelphia, Penn.

1920—Brooklyn, N. Y.—The Bureau of Public Buildings and Offices will receive bids until 11 a.m. Jan. 12, for furnishing and delivering 17,976,000 lb. of anthracite coal as may be required at the various public buildings, courts, baths and comfort stations in the Borough of Brooklyn. Deliveries are to be made during the period ending Dec. 31 of the current year. Address Bureau of Public Buildings and Offices, Room 1003, 50 Court St., Brooklyn, N. Y. (No. 1617, Vol. 8, pp. 786, 870.)

1921—Bottineau, N. D.—Sealed bids were received till 2 p.m., Jan. 6 for furnishing the Board of County Commissioners Screened Youghiogheny lump coal to be delivered in the bins at the court house as required for the year 1916. Address County Auditor G. H. Hebert, Bottineau, N. D.

Contracts Awarded

Note—Successful bidders are noted in **bold face** type.

1349—Ogden, Utah.—This contract (Vol. 8, p. 411), which provides for furnishing the local Board of Education with its annual fuel requirements, involving approximately 1,400 tons of Castle Gate screened slack coal, has been distributed among eight or ten local dealers, all of whom bid \$3.25 per ton, delivered to the school. Address Board of Education, Hudson Bldg., Ogden, Utah.

1622—Spokane, Wash.—This contract (Vol. 8, pp. 787, 1043), which provides for furnishing the City Government with as much coal as may be required during the current year, not exceeding 600 tons, has been awarded to the **Diamond Ice and Fuel Co.** at \$4.75 per ton for Carbondale slack, delivered at the City Hall, and \$5.45 for mine-run delivered at the Isolation Hospital. Address Comr. A. A. Kraft, Dept. of Finance, Spokane, Wash.

1715—Austin, Tex.—This contract (Vol. 8, p. 998), which provides for furnishing the local water and light department with approximately 60 tons of lignite coal per day, has been awarded to **Ira Perry**, at \$1.28 per ton, f.o.b. Austin. Address Supt. E. C. Bartholomew, Water, Light and Power Department, Austin, Tex.

1736—South Whitley, Ind.—This contract (Vol. 8, p. 999), which provides for furnishing the Water and Light Plant at this place with between 1,500 and 1,800 tons of mine-run coal, has been awarded to the **Litz-Smith Fuel Co.** at 90c. per ton. Address Clk. F. E. Fox, South Whitley, Ind.

1745—Martins Ferry, Ohio.—This contract (Vol. 8, p. 999), which provides for furnishing between 3,000 and 4,000 tons of mine-run coal to the Municipal Electric Light Plant has been awarded to the **Burlington Coal Co.** at \$6.10 per 100 bu., delivered in the bins. Address Clk. George H. Harris, Martins Ferry, Ohio. (No. 215, Vol. 7, p. 446.)

1747—New York, N. Y.—This contract (Vol. 8, pp. 1043, 1087), which provides for furnishing 3,000,000 lb. of No. 2 buckwheat and 500,000 lb. of egg coal for the Asphalt Plant, has been awarded to the **Charles D. Norton Co.** at \$1.41½ per 1,000 lb. of buckwheat and \$2.90 for egg. Address Borough Pres. Marcus M. Marks, Municipal Bldg., New York, N. Y. (No. 605, Vol. 7, pp. 795, 918.)

1761—Van Wert, Ohio.—This contract (Vol. 8, p. 1044), which provides for furnishing the local Water Works with white ash nut coal, has been awarded to the **Baluent Coal and Builders' Supply Co.** at \$13.15, delivered in the bins. Address Dir. W. T. Backus, Pub. Ser., Van Wert, Ohio.

1763—St. Louis, Mo.—This contract (p. 1044), which provides for furnishing the annual fuel requirements of the Hamilton Brown Shoe Co., involving approximately 300 tons of 2-in. lump coal per month, has been awarded to the **Lumaghi Coal Co.** on their "Cantine" coal. Address Mgr. P. L. Hogan, Hamilton Brown Shoe Co., Columbia, Mo.